NETWORK WORLD
The Newsweekly of User Networking Strategies

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Novell to lay out NetWare OSI strategy

By Jim Brown
Senior Editor

WASHINGTON, D.C. — Novell, Inc. this week is expected to announce that its NetWare local net operating system will support Open Systems Interconnection protocols by August 1990.

At a press briefing here, Novell will detail its plans for embracing the International Standards Organization's OSI model as part of its NetWare Open Systems strategy. Through this strategy, the company will enable NetWare to support a variety of network protocols.

Novell will initially support the Government OSI Profile (GOSIP), which specifies how vendors must implement OSI in products sold to the federal government. Later, Novell will add support for other OSI profiles such as U.K. GOSIP, the British government's OSI implementation.

The NetWare Open Systems strategy is designed to reduce NetWare's reliance on Novell's proprietary Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX) protocol and make it easier for users of disparate equipment to share data across a NetWare network.

"This says you don't have to lock yourself into Novell-supplied protocols," said Duane

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PHOTO ©1989 CINDY CHARLES

Destruction in the wake of the massive earthquake that rocked San Francisco, Oakland and other Northern California areas last week.

DEC fleshes out plans for DECnet Phase V migration

Tells analysts development of OSI-based net blueprint is on track, details Phase V features.

By Paul Desmond
Senior Writer

BOSTON — In a daylong briefing with analysts here, Digital Equipment Corp. said development of DECnet Phase V is on schedule and revealed migration plans and new details about the architecture.

Although much of the briefing was spent reviewing DECnet Phase V, analysts said the company also discussed new Phase V capabilities slated to be announced in the spring for fall delivery.

Among the new features is the DECnet Naming Service, which allows users to assign a unique name to every network device and to map to that name information about the device, such as the protocols supported.

This will be particularly important in Phase V because the architecture also includes an expanded address field that will enable users to build networks of almost unlimited size.

DECnet Phase V, announced in 1987, promises to incorporate many Open Systems Interconnection standards, including standards for net management, network addressing schemes and transport mechanisms.

Analysts who attended the briefing were impressed by DEC's

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Quake wreaks havoc on Calif. net users

Companies implement disaster recovery plans following Tuesday's devastating earthquake.

By Barton Crockett
Senior Editor

SAN FRANCISCO — The quake that rocked the Bay Area last week, killing hundreds and causing billions of dollars in property damage, wreaked unprecedented devastation on corporate networks.

At least 13 major corporations declared their primary data and network centers unusable and shifted operations to backup data centers. Power outages and structural damage forced countless others to shut down their nets or reroute traffic to alternate locations.

"This is by far the most massive recovery situation we've ever seen," said Ray Hipp, president of Comdisco Disaster Recovery Services, Inc., a Chicago-based company. "I'm shocked. This is devastating."

Reports from Comdisco and Wayne, Pa.-based SunGard Recovery Services, the U.S.' two biggest disaster recovery firms, indicate that the Bay Area earthquake may be the largest information systems crisis in history.

Of SunGard's 20 Bay Area customers, which include some of the largest network users in the country, five had declared their primary data centers inoperable by press time and another four were near doing so. For the first time in SunGard's history, all three of its recovery hot-site facilities were in use simultaneously.

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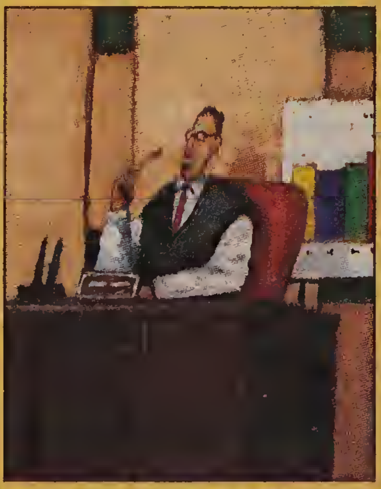

Two views of OSI. Page 44.

Users urging FCC not to nix Tariff 12

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — As the Federal Communications Commission prepares this week to rule on whether its April decision allowing AT&T to proceed with Tariff 12 offerings will stand, a number of corporations have mounted a lobbying campaign to keep the tariff intact.

Although it is possible that the FCC could completely reverse its earlier decision and bar AT&T from offering Tariff 12 contracts, most observers say that is unlikely. However, substantial changes could be made to the original order and, at this point, FCC insiders say it is unclear how the agency will rule.

A joint effort

Over the past few weeks, a number of users have met with FCC commissioners, urging them

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NETLINE

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HP STIRS UP the distributed computing market with its new Task Broker. Page 6.

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NEWSPAPER

FEATURE

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Intelligent buildings may be a smart idea after all

By Kris Herbst
Special to Network World

MANAGEMENT UPDATE

The idea of "smart" buildings with computer-controlled mechanical and electrical systems made a big splash in the mid-1980s. Riding the wave of computer popularity that accompanied early Apple and IBM microcomputers, developers planned "intelligent" homes, skyscrapers and entire office parks.

However, it soon seemed that the concept exceeded technology's reach. Problems with system design, incompatible equipment and networking technology made it look like the intelligent building was a dumb idea.

Is the interconnected, computer-controlled building system really feasible?

"The intelligent building started with exactly that in mind," says Ron Sumski, re-

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Banking company opts for fractional T-1 net vs. DDS

Bank's concerns about the reliability of AT&T's Accunet Digital Services have been dispelled.

By Bob Wallace
Senior Editor

ENGLEWOOD, Colo. — CoBank, a national bank holding company formed in January, is installing a nationwide fractional T-1 network after discovering that the service cost one-third less than traditional digital data services and is equally reliable.

The bank, among the first to implement AT&T's fractional T-1 service, will use the 56K bit/sec network to handle a marked increase in loan applications from rural farm, utility and telephone cooperatives.

CoBank was formed when 11 of the 13 banks that made up the banking arm of the 56-year-old Farm Credit System decided to merge amidst a major recession in the agriculture industry.

Network designers at CoBank were devising a distributed processing network to support the merged operation that would have located minicomputers at remote offices and tied them to headquarters via analog dial-up lines when top management decided to centralize data processing. That move sent network designers back to their drawing boards to analyze the data communications implications of tying geographically scattered offices to one site.

"We determined we'd need four times the throughput of the dial-up lines and started shopping," said Eric Johnson, senior network systems programmer for CoBank. "We turned white as ghosts when we looked at pricing for [AT&T's 56K bit/sec Dataphone Digital Service]. After that we *really* started to sweat."

The 56K bit/sec Dataphone Digital Service circuits would have cost CoBank more than $35,000 a month, while analog private lines would have cost the bank $10,000 a month, according to Johnson.

In late April, AT&T announced Accunet Spectrum of Digital Services (ASDS), a fractional T-1 service that enables users to buy bandwidth on a carrier-supported T-1 line in 56K or 64K bit/sec increments.

Johnson was initially worried that ASDS would be less reliable than Dataphone Digital Service. But when he compared 56K bit/sec ASDS against Dataphone Digital Service, Johnson found that AT&T guarantees virtually the same bit error rate for both services. "We were looking at a

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PHOTO ©1989 GEOFF O'CONNELL

Jayshree Ullal, Michael Gardner and Roger Bertman of Ungermann-Bass discuss product additions to Access/One local net line.

UB launches its Access/One additions to enhance line

Brings Macintosh under control of Access/One.

By Tom Smith
New Products Editor

SANTA CLARA, Calif. — Ungermann-Bass, Inc. last week broadened the scope of its Access/One local net line with the introduction of a wide-ranging series of products.

The firm rolled out 16 products, the largest introduction in its history, including a smaller Access/One model, two products to link Apple Computer, Inc. Macintoshes into the Access/One, a series of intelligent local and wide-area network bridges, and additional protocol support.

Ungermann-Bass also enhanced its net management system, gutting its original user interface and replacing it with an English language front end. Plus, the firm built additional network management intelligence into Access/One interface boards.

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Briefs

James River signs Tariff 12 pact. James River Corp. of Virginia last week said it has signed a multiyear, fixed-price custom network contract proposed by AT&T under Tariff 12.

James River also considered bids from MCI Communications Corp. and US Sprint Communications Co. for a voice and data network to serve 173 offices across the U.S. and abroad.

"We've already signed the contract. We expect AT&T to file Tariff 12 with the FCC any day now," said James Miller, MIS vice-president for James River.

James River is currently a large MCI customer, using MCI's Vnet virtual private network service at almost three dozen sites. James River officials declined to detail terms of the agreement and AT&T refused to comment.

Reuters signs satellite pact. Reuters Information Services, Inc. last week said it awarded a $10 million contract to GTE Spacenet Corp. to install the U.S. portion of a global satellite-based network. Next year, GTE Spacenet will install as many as 1,000 very small aperture terminals at client sites that will enable clients to receive Reuters news and financial broadcasts.

Reuters could not be reached for comment at press time.

Codex seeks resignations. Codex Corp. last week announced a voluntary resignation program designed to help reduce the company's operating expenses. Under the program, employees are offered incentives to resign.

"We're adjusting our infrastructure and building the company to support our next stage of growth into the high-end networking and systems business," a spokesman said. Those growth areas include T-1, X.25 packet switching and network management products. The spokesman would not detail how many jobs Codex is looking to trim.

Employees had until Friday to apply for the program. The spokesman said Codex is looking to thin its manufacturing, administrative, human resources and communications departments.

3Com at your service. 3Com Corp. last week announced new service options, including a new overnight hardware repair program and an expanded volume training program.

Both programs, which will be available Nov. 1, are targeted at users that want to perform their own network maintenance and troubleshooting.

Users that sign on for the Overnight Hardware Replacement program can get replacement parts overnight to restore network operations or to replace a critical spare part.

The new Volume Training Program is designed for users with at least $30,000 worth of 3Com network systems and that need to train four or more network administrators or technical support staffers. As part of this service, 3Com helps customers plan their own training and gives them discounts for multiple trainee enrollments.

Prices for the new services vary according to users' installation.

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Data Communications
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Local Networking
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Management Strategies
U.S. companies could waste millions of dollars on ill-conceived information systems efforts in coming years unless they find ways to better integrate technology and business operations. **Page 29**

Products & Services
CASE/Datatel, Inc. recently announced a control unit that enables IBM's host-based NetView network management system to directly control CASE/Datatel modems, obviating the need for NetView/PC. **Page 33**

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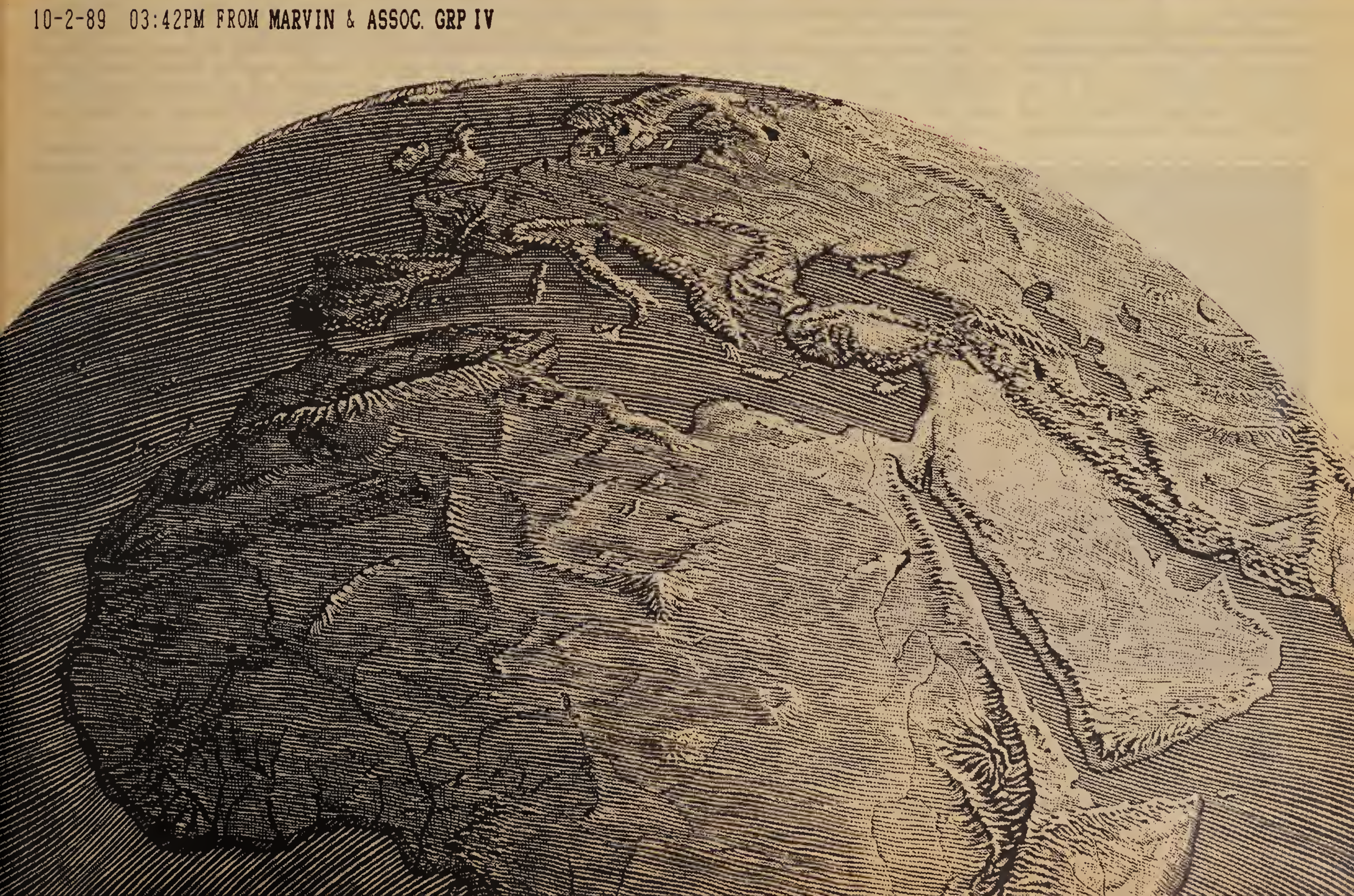
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Long-haul carriers MCI and AT&T post healthy third-quarter profits

AT&T revenue growth stagnates; early retirement plan aired.

By Gail Runnoe
Washington Correspondent

WASHINGTON, D.C. — MCI Communications Corp. and AT&T last week reported improved third-quarter financial performance, with MCI posting dramatic growth in profits.

MCI reported earnings of $158 million for the quarter ended Sept. 30, up roughly 60% from the $99 million recorded in the third quarter last year. Analysts attributed the growth to lower operating costs and continued growth in commercial and residential sales.

Revenue increased to $1.67 billion, up 23% from the $1.36 billion recorded in the corresponding quarter of 1988. Operating margins rose from 12.6% to 16.1%. MCI said this is the seventh consecutive quarter it has reported increases in revenue, earnings and operating margins.

AT&T reported a profit of $699 million for the quarter, up almost 20% from $587 million in the third quarter last year. Revenue rose only 1%, from $8.812 billion to $8.896 billion.

AT&T said sales of services increased 6.4% in the last three-month period on calling volume growth of 5%. Much of that volume growth came from outbound and inbound business services, and international calling, the company said. That growth, however, was largely offset by lower equipment sales and rentals.

Separately, AT&T announced a new early retirement incentive plan that it said could trim management ranks by 5,000 to 15,000 people. Under terms of the offer, nearly 34,000 of the company's more than 100,000 managers will be eligible for either full or partial pensions if they retire by Dec. 30.

Improving cash flow

AT&T said the program should reduce costs and improve cash flow over time. In the short term, however, AT&T said it is likely to increase fourth-quarter expenses. AT&T said this increase should be offset by other items, including an expected gain from the planned exchange of holdings in Ing. C. Olivetti & Co., S.p.A. for shares in Compagnie Industriali Riunite, the Italian holding company for Olivetti.

Joel Gross, vice-president at Donaldson Lufkin & Jenrette, a New York investment firm, called the pension offer "a healthy step for AT&T" that should enable it to

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NET forms private company to build T-3 and SONET products

By Paul Desmond
Senior Writer

REDWOOD CITY, Calif. — Network Equipment Technologies, Inc. (NET) last week announced the formation of a subsidiary that will develop T-3 and other high-speed net products for hybrid private/public networks.

The new subsidiary, Adaptive Corp., is a privately held company owned jointly by NET and the new employees of Adaptive, many of whom come from NET, according to Audrey MacLean, chief executive officer of the start-up.

Adaptive was formed to create an entrepreneurial atmosphere in which to develop products that support T-3 45M bit/sec transmission facilities, as well as the emerging Synchronous Optical Network (SONET) standard for communications over fiber cable at speeds ranging from 51.84M to 155.52M bit/sec, MacLean said.

Adaptive will take over NET's joint development project with Tellabs, Inc., which was announced in April ("NET unveils T-3 mux in product blitz," *NW,* April 17). That agreement was to develop SONET-compatible switches that would bridge private and public networks, enabling users to build so-called hybrid nets.

Hybrid networks combine private transmission facilities with carrier-based facilities so companies can have a private T-1 backbone and use carrier services to support low-volume sites.

MacLean said all Adaptive products will be compatible with NET's Integrated Digital Network Exchange (IDNX) multiplexer line, which includes the IDNX/90, a T-3 multiplexer announced in April.

Some of Adaptive's development efforts will be based on Tellabs' Titan 5500 Series of high-bandwidth digital access and cross-connect systems. The products can switch any combination of T-1 or T-3 facilities and their European counterparts, as well as nonchannelized T-3 facilities.

MacLean declined to say when Adaptive would announce its first products.

Analysts applauded the idea of forming the new company.

"I think it's a brilliant move," said Jack Freeman, senior data communications analyst with The Yankee Group, a Boston consulting company. "It puts NET into a totally new ballpark that they haven't been in before, and that's public network-compatible networking."

Timothy Zerbiec, a principal at Vertical Systems Group, a consultancy in Dedham, Mass., agreed. "The announcement seems to be a concession to the concept that hybrid nets are really the wave of the future."

Zerbiec said spinning off the company will make it easier for NET to keep track of resources and will provide a clear focus for Adaptive employees.

One analyst, who requested anonymity, speculated that the formation of Adaptive might be an NET ploy to protect itself from IBM, which has a marketing agreement with NET and owns the rights to much of its software. Any products developed by Adaptive would be exempt from the IBM agreements, the analyst said.

Correction: In the article "VSAT mart matures, rivals terrestrial links" (*NW,* Oct. 16), Eddy Hartenstein was incorrectly identified. Hartenstein is senior vice-president for network services at Hughes Communications, Inc., a subsidiary of Hughes Aircraft Co.

J.C. Penney Co. to do away with proprietary EDI

By Bob Brown
Senior Editor

NEW ORLEANS — After using its own proprietary electronic data interchange formats for about 15 years, J.C. Penney Co., Inc. said last week it has begun implementing EDI standards on a grand scale.

William Lane, EDI Program Manager for J.C. Penney, spoke at the 31st Annual Retail Information Systems Conference here about his company's efforts to migrate to standards-based EDI.

J.C. Penney currently transmits purchase orders to 625 suppliers and receives invoices from 250 suppliers in its proprietary EDI format, Lane said.

Last year, the retailer ordered $3.6 billion in merchandise and materials through its proprietary EDI setup. The company received roughly 15 million invoices — over half of its invoice volume — through its proprietary EDI network last year.

With the company already conducting so much business using proprietary formats, observers question why J.C. Penney would go to the trouble and expense of migrating to standard EDI formats, Lane said.

"We felt standards were a way of allowing us to trade more transactions than just an invoice and a purchase order," Lane said. Other documents that have been addressed by standard EDI formats, such as advanced ship notices and order status reports, are important in developing a competitive advantage, he said.

While the company could have gone to the expense of building proprietary formats for those documents, use of standard formats will aid J.C. Penney in adopting its so-called Quick Response strategy, which enables retailers to keep their shelves stocked with the hottest selling items by sharing purchasing data with trading partners via EDI.

J.C. Penney is adopting the Volunteer Interindustry Communication Standard (VICS) subset of the ANSI X12 standards, which is designed for users in the retail industry.

So far, the company is using VICS to send purchase orders to about 30 suppliers and is receiving invoices from one supplier. Order status reports, order status requests and advanced ship notices are being exchanged with 125 suppliers, he said.

J.C. Penney is migrating its supplier base to the standard EDI formats in a phased cutover. The retailer has chosen to hook up first with trading partners already using standard EDI formats, Lane said. J.C. Penney gives trading partners two months to set up EDI for purchase orders and six

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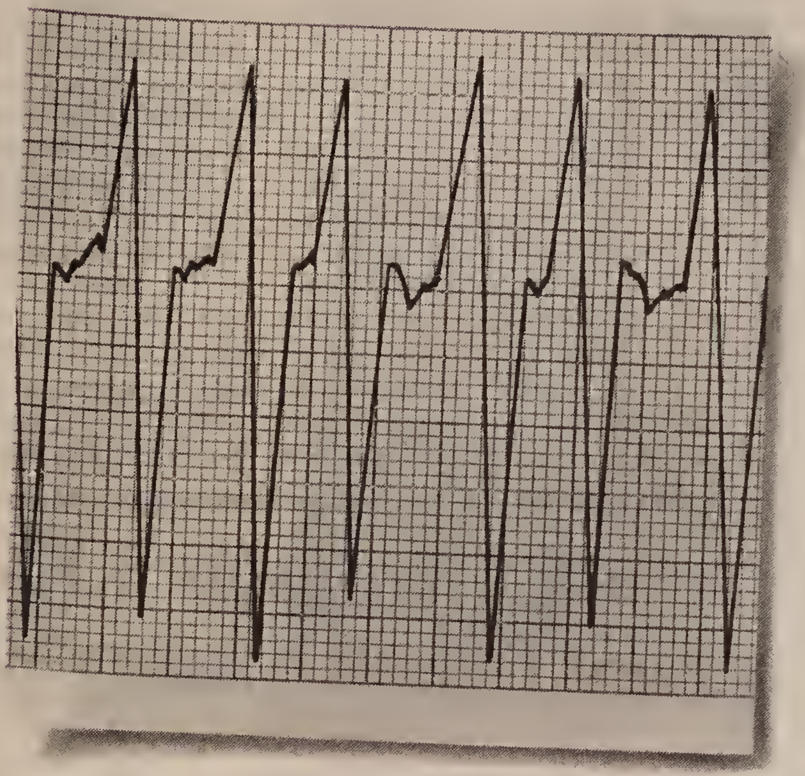

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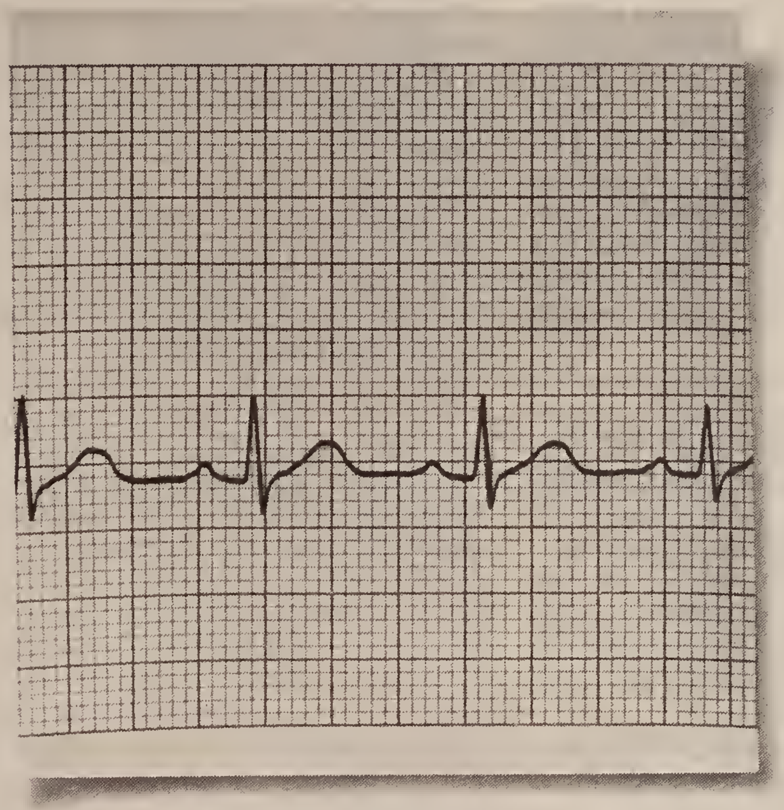

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HP offers tool for distributed net applications

By Jim Brown
Senior Editor

PALO ALTO, Calif. — Hewlett-Packard Co. last week introduced software it said will introduce users to distributed computing without forcing them to invest in distributed application development technologies, such as the Network Computing System (NCS) offered by its Apollo Division.

HP's Task Broker enables users to off-load an entire task, such as an engineering simulation, from one computer on a network to another without developing specialized applications. In contrast, NCS is a set of tools for developing applications that break tasks into numerous subroutines, which are then distributed to different computers.

In a separate announcement, an Apollo official revealed last week that IBM and Microsoft Corp. have committed to enhancing Apollo's NCS to run under IBM's various operating systems and Microsoft's LAN Manager local network operating system. IBM and Microsoft declined to comment on the subject.

Backing from IBM and Microsoft will help Apollo line up third-party developers to build NCS-based applications. Although more than 200 vendors, including IBM, have licensed NCS, few have actually developed NCS applications. Apollo said it will announce by year end a list of other vendors pledging to build NCS applications. Also last week, HP said NCS-based applications will now run on HP's Unix-based workstations.

The backing of IBM and Microsoft is critical for NCS, which is vying with Sun Microsystems, Inc.'s Open Network Computing (ONC) system to be chosen as the distributed computing standard by the Open Software Foundation. OSF, a vendor group working on defining a portable application development environment, is being bolstered by technology borrowed from both Netwise, Inc. and Novell, Inc.

Apollo indicated last week it may be willing to work with Sun to merge the ONC and NCS technologies.

HP and Apollo are counting on HP's Task Broker to bring in new NCS customers. Initial versions of Task Broker will run on HP, Apollo and Multiflow Computer, Inc. computers under Berkeley Unix.

A copy of Task Broker, which will be available in January, is loaded onto each computer on a Transmission Control Protocol/Internet Protocol network. A user seeking to off-load a task from one computer to another can use Task Broker to broadcast a request for computing power across the net.

Each computer capable of performing that task replies to the request, detailing how quickly and when it can process the task. The end user can choose which computer will process the task or instruct Task Broker to automatically pick the computer best suited for the task.

HP said it is hoping Task Broker will show users the benefits of distributed computing and convince them to implement the more feature-rich NCS.

HP said a new version of Task Broker that works with NCS is currently under development. It will communicate with NCS' Location Broker, a data base that details the capabilities of each computer on the network, to determine which computer will process a task. This will reduce network traffic.

A 10-user Task Broker license costs $5,000, and a site license for an unlimited number of users is priced at $30,000.

Analysts praised Task Broker as a way for users to enjoy distributed computing without the headaches of rewriting existing applications. "You don't have to rewrite applications or think about how they're going to be split up," said Martyn Roetter, senior consultant with Cambridge, Mass.-based consultancy Arthur D. Little, Inc.

Analysts say Apollo needs to gain more

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OSI/NM Forum finally signs on IBM and DEC

By Bob Brown
Senior Editor

TORONTO — The OSI/Network Management (OSI/NM) Forum hit the jackpot during meetings here last week, when IBM and Digital Equipment Corp. — which the group has been courting since its formation in July 1988 — joined its ranks.

The two big network management players have been expected for some time to join the forum, whose charter is to accelerate the use of emerging Open Systems Interconnection network management standards ("OSI/NM may win over IBM and DEC," *NW,* Sept. 4). IBM and DEC said resolution of their concerns about the forum's bylaws on intellectual property rights paved the way for their induction as voting members of the OSI/NM Forum.

The forum now has 15 voting members and 81 members overall worldwide.

Industry watchers and forum members hailed the news, saying IBM's and DEC's participation will enhance the group's stature in the eyes of network users.

IBM and DEC will also provide additional financial and technical resources that will help the group make faster progress toward its goals, said Keith Willetts, the forum's president. Their participation could encourage vendors sitting on the sidelines to join the group as well, he said.

IBM and DEC will be encouraged to offer more than the minimum resource requirements, Willetts said. Resources from the two companies will be used "in areas where we need help," he said, adding that the group has not specified those areas.

Ellen Hancock, IBM vice-president and general manager of the Communication Systems group, said in a prepared statement, "We believe the implementation of international standards is the correct mechanism for achieving communications between network management systems and that OSI/NM can be instrumental in accelerating the use of OSI network management standards."

Gary Gottschalk, group manager of management systems engineering at DEC, said his company is excited about joining the forum because the OSI/NM Forum's direction "blends nicely" with DEC's Enterprise Management Architecture (EMA) approach. EMA is DEC's network management blueprint and is based on OSI standards. "We view our membership in the forum as being a key step in moving toward a long-term strategy of providing OSI network management products," Gottschalk said. DEC's users have been urging it to join the OSI/NM Forum, he added.

Neither IBM nor DEC would detail how they plan to integrate OSI/NM specifications into their product lines.

The addition of IBM and DEC to the OSI/NM Forum's roster is significant "simply because users have so much IBM and DEC equipment installed," said Bart Stuck, president of Business Strategies, a Westport, Conn.-based consulting firm. ◻

Upgraded net helps N.Y. exchange handle record trading volumes

By Tom Smith
New Products Editor

NEW YORK — Network upgrades implemented after the crash of 1987 enabled the New York Stock Exchange, Inc. to flawlessly handle last week's peak trading volumes prompted by the market's 190-point plunge on the previous Friday.

In the first two hours of trading last Monday, a record 227 million shares changed hands; the 145 million shares traded in the first hour was the second-highest total ever. Total volume for the day was 416 million shares.

"It's a day I'll never forget because it was so easy and we were so worried," said Joel Beier, vice-president of capital markets systems for the New York Stock Exchange. Beier said there were no network-related delays or order backups, even in the fast-paced first two hours.

He said the post-October 1987 upgrade primarily involved the exchange's common message switch, which consists of multiple Tandem Computers, Inc. TXP minicomputers running Common Software developed by the exchange's data processing subsidiary, Security Industry Automation Corp., based here. The switch routes buy and sell orders among the exchange members' trading systems.

The exchange has enhanced the software and added processors to increase the system's message handling capacity.

At the time of the 1987 crash, the common message switch could process 95 messages, or buy and sell orders, per second. With the upgrade, it can now process 140 messages per second.

With the current message handling capabilities, the New York Stock Exchange could handle as many as 600 million trades per day, Beier said. In the busiest minute recorded during the first two hours of last Monday's trading, the common message switch was processing about 118 messages per second, he said. ◻

WANK worm infiltrates NASA research nets

By Laura DiDio
Senior Editor

GREENBELT, Md. — Some people never learn. That's the lesson in the wake of the so-called WANK worm virus that infected about 70 Digital Equipment Corp. systems worldwide on two networks operated by NASA last week.

WANK — an acronym for Worms Against Nuclear Killers — infiltrated the National Aeronautics and Space Administration's Space Physics Analysis (SPAN) and the High Energy Physics educational and research net Monday but caused no damage. The author(s) of the worm were protesting the launch of the nuclear-powered Galileo probe from NASA's space shuttle Atlantis. The systems that got hit throughout the U.S., Japan and Europe all

(continued on page 8)

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See the FAXNeT Form on Page #53

J.C. Penney dumping proprietary EDI

continued from page 4

months to set up EDI for invoices.

"One of the biggest surprises has been how slow some trading partners are in getting hooked up," Lane said. "There are some cases where it takes only a week to set up, while others take six months to set up for [puchase orders]."

When Lane took on J.C. Penney's top EDI job in January 1988, the staff consisted "basically of me," he said. Since then, J.C. Penney has developed three major EDI groups — a steering committee that sets corporate EDI goals, a technical committee and an EDI group, which handles communications between J.C. Penney and its suppliers.

The steering committee is made up of managers from J.C. Penney's five major business units, including its merchandise, catalog and store departments. This group helps J.C. Penney determine transaction priorities, that is, which department's EDI transactions should be handled first. This group is also responsible for funding EDI programs.

The EDI technical committee consists mainly of MIS employees and is responsible for such things as coordinating EDI with applications development.

The EDI group, which monitors ANSI X12 standards, provides training and support to trading partners, and tests the company's EDI translation products.

In preparing to adopt EDI standards, J.C. Penney mailed out surveys to 1,000 of its most important suppliers, asking where they stood with EDI. The firm chose six suppliers as a beta-test group with which it can evaluate new EDI documents.

J.C. Penney then had to decide whether to buy or build EDI translation software. It wound up buying the Gentran product from ORDERNET Services, Inc. With changes to the EDI standard occurring about twice a year, J.C. Penney chose to let a third-party vendor take care of the translation software, Lane said.

J.C. Penney also could have used its own network to support its EDI transmissions but selected GE Information Services instead. Lane admits there are some advantages to direct transmission of EDI documents over an internal network, such as gaining more control over the EDI data being sent. "We haven't ruled out that maybe our big suppliers will go direct," he said. ◘

Novell to lay out NetWare OSI strategy

continued from page 1

Bowman, director of planning and development for Novell's software products group. Bowman said supporting GOSIP under NetWare will let Novell develop NetWare-related products that support OSI's File Transfer, Access and Management application, and X.400 electronic mail and X.500 directory services standards. Novell is currently working with British Telecommunications PLC to develop a gateway that links its Novell Message Handling Service E-mail system to X.400-based E-mail networks.

It will also allow NetWare to support OSI's Common Management Information Services (CMIS) and Common Management Information Protocol (CMIP) network management protocols. This will enable users to monitor and control NetWare networks using any vendors' CMIS- and CMIP-based net management system.

Bowman said Novell is building support for GOSIP into NetWare to satisfy government procurement rules that require agencies to purchase GOSIP-compliant products starting in August 1990.

Contractors that need to communicate with government agencies, educational institutions and their European customers have also been urging Novell to add support for OSI to NetWare, Bowman said.

In the past, Novell has promised to enhance NetWare to enable users to run multiple networking protocols, including IPX/SPX, OSI and Transmission Control Protocol/Internet Protocol. That would enable, for instance, a network-attached microcomputer supporting an IPX/SPX-based application and one supporting a GOSIP-based application to share information and access a NetWare server.

To ease the migration from existing IPX/SPX-based NetWare applications to GOSIP-based NetWare applications, Novell said it will develop software that lets programmers build GOSIP applications using the same application programming interfaces they currently use to develop applications supporting other transport protocols, such as TCP/IP or IPX/SPX.

"There are certain interfaces that people are used to using," Bowman said. "We're going to support these interfaces in the GOSIP environment." These include IBM's Network Basic I/O System, the Sockets interface used in Berkeley Unix and the Streams interface used in AT&T System V Unix. ◘

WANK worm infiltrates NASA nets

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had one thing in common: Users had either no system password or their password was identical to their logon.

What users saw when they logged on early Monday morning was a message that said: "Your systems have been officially WANKed. You talk of times of peace for all and then prepare for war."

WANK infected less than .5% of the 18,000 systems on the two networks, which are subnets of the Internet network.

"The intent wasn't to do damage; it was a prank to exploit bad or nonexistent security measures," said Ron Tencati, security manger at SPAN headquarters at the Goddard Space Flight Center here. According to Tencati, the WANK Worm's progress has been halted and SPAN has just about completed the network cleanup. ◘

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See the FAXNeT Form on Page #53

INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

> "Today, when we talk about telecommunications and cable TV, we're no longer talking about apples and oranges. We're talking about two-way information — apples and apples."

Paul Henson
Chairman of United
Telecommunications, Inc.,
in remarks at the U.S. Telephone
Association convention in
San Francisco last week

People & Positions

Peter Simon, who joined local net vendor **Banyan Systems, Inc.** in early 1988 as vice-president of marketing to give direction to the company's sales and marketing plan, resigned recently.

Simon's resignation marks the second high-ranking official to leave the company this year. Company President Richard Meise resigned earlier this year, citing differences with company founder David Mahoney.

Simon had been handpicked by Meise to develop new marketing strategies for Banyan.

Banyan said Simon, who was originally recruited from Lotus Development Corp., will remain briefly in a consulting capacity.

Banyan appointed **Jack Kay**, previously vice-president of the company's sales operations, to the marketing post under the title of vice-president of sales and marketing.

Peter Davis was named president and chief executive officer of **SunRiver Corp.** in Austin, Texas.

Previously, Davis was president of Open Systems, Inc., an Eden Prairie, Minn.-based maker of microcomputer accounting and business software.

SunRiver sells fiber-optic products for networking work group and departmental computers. ◘

Consumers Software and IBM team up

1 The companies codeveloped DOS-based local network support for IBM's OfficeVision office automation environment.

2 IBM has pledged support for interoperability between Consumers Software's Network Courier E-mail software and OfficeVision.

3 IBM's sales force will sell Network Courier directly to customers

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: CONSUMERS SOFTWARE, VANCOUVER

Consumers Software sees IBM deal as plus

Compatibility between IBM OfficeVision line and Consumers' Network Courier lures DOS users.

By Bob Brown
Senior Editor

VANCOUVER — IBM's OfficeVision introduction in May made such a splash that it almost drowned out the related news of Big Blue's marketing and codevelopment partnership with Consumers Software, Inc.

But executives at Consumers Software aren't concerned. They said the relationship is already generating additional sales of the company's Network Courier electronic mail package for DOS-based local nets, which isn't surprising since the deal allows IBM's roughly 10,000 salespeople to market the product.

Jack Grushcow

The partnership gives IBM a way to bring the large installed base of DOS-based networks into its OfficeVision strategy. IBM and Consumers Software agreed to provide for compatibility between Network Courier and OfficeVision products, enabling users on DOS-based local nets to exchange messages with OfficeVision users on a variety of systems.

OfficeVision programs will support a range of office functions on IBM mainframes under VM and MVS, Application System/400 minicomputers and OS/2-based personal computers in a local network.

Consumers Software benefits from IBM's marketing muscle and gains an edge over local net E-mail rivals, such as 3Com Corp. and cc:Mail, Inc., by working directly with IBM on OfficeVision compatibility.

That's an important consideration for many users, analysts said. "If you've got a true Blue shop and you want a solution now, clearly, Consumers Software is the way to go," said David Atlas, senior analyst for electronic messaging at International Data Corp., a Framingham, Mass.-based market research firm.

Peter Rakoczy, project manager for information delivery technology at the Royal Bank of Canada in Toronto, said the IBM and Consumers Software relationship bodes well for his company, which currently runs 11 local nets.

"Network Courier is a good product for us in the interim, until we're ready for an OS/2 solution," he said.

Important opportunities

The OfficeVision introduction was touted by some as IBM's most important software announcement ever. OfficeVision products are the first IBM offerings to comply with the computer maker's Systems Application Architecture (SAA) ("IBM SAA programs offer systems unity," *NW*, May 22).

With OfficeVision on its side, Consumers Software appears to be in a strong position. In a letter to customers, Consumers Software President Jack Grushcow recently outlined "important op-

(continued on page 11)

Voice-Tel uses franchising to attack messaging market

Plan puts voice mail bureaus closer to users.

By Gail Runnoe
Washington Correspondent

HUDSON, Ohio — Voice Enterprises, Inc. has adopted a franchising strategy that the company hopes will give it greater penetration of the voice-messaging services market than many of its larger competitors.

Starting with only two franchises two years ago, the company now has 50 franchises that operate under the Voice-Tel name. Current annual sales are about $4.5 million, and the company anticipates that next year's sales will more than double to $10 million. The number of franchises is expected to triple to 150 by 1995.

Voice Enterprises adopted the franchise strategy for rapid and widespread market penetration. "A franchise system is really a method of distribution," said Charles Feuer, president of Voice Enterprises.

"We are the first company to adopt this strategy," Feuer said. "Our competitors have taken a centralized approach," putting all their equipment in a few major cities. "Our strategy is to distribute," he said.

This means more customers can access Voice-Tel voice-messaging services by making local telephone calls. Because Voice-Tel has put service bureaus in metropolitan areas around the country, "90% of our customers can make a local call to get to our service," Feuer said.

Feuer explained that companies that centralize their service must bring the customer to the machines, paying for long-distance calls or 800 numbers.

Currently, Voice-Tel's franchises are not networked and provide primarily local services. To reach another service bureau, users must make a long-distance call. However, Feuer said the company plans to build a national network connecting all its franchises over leased lines provided by carriers such as AT&T, US Sprint Communications Co. or MCI Communications Corp.

Feuer said the network will let Voice-Tel franchises provide long-distance connections for 30% less than the cost of 800 number access. Once the net is implemented early next year, business customers will be able to leave a local phone message that can be sent anywhere in the U.S. for less than 50 cents. That message can then be sent to as many as 250 people, Feuer added.

(continued on page 10)

INDUSTRY BRIEFS

IBM last week posted a 30% earnings drop for the third quarter ended Sept. 30, due primarily to late shipments of its high-end mainframe disk drives.

Earnings for the third quarter fell to $877 million, down from $1.2 billion reported for the third quarter of 1988.

IBM's revenue for the period increased slightly to $14.3 billion, up 4.3% from $13.7 billion in revenue for 1988's third quarter. The increase was bolstered in part by IBM's sale of MCI Communications Corp. stock it previously held and a payment from Fujitsu, Ltd. relating to a legal settlement.

Infonet, an El Segundo, Calif.-based value-added network provider, last week announced a new systems integration service designed to help users build global corporate networks.

Under its new Enterprise Defined Network Service program, Infonet will identify a user's data networking needs and optimize the user's existing networks. Infonet would install, maintain and operate the unified network.

Riding strong market acceptance of its Ethernet and token-ring bridges, **Vitalink Communications Corp.** last week posted 99% earnings growth and a healthy revenue increase for the year ended Sept. 30.

The company reported earnings of $18.7 million this year, up from $9.4 million in 1988. The earnings increase included a gain of $2 million from the sale of discontinued operations for its VitaCom transponder operations and a $4.1 million tax benefit from a net operating loss carryforward from 1987.

Vitalink posted net sales of $57.2 million for fiscal year 1989, compared to $37.4 million in sales for fiscal 1988. ◘

Trend to link systems to spur sales

By Bob Brown
Senior Editor

CHICAGO — Vendors of electronic mail products and services say the trend toward interconnection of public and private E-mail network "islands" will drive continued market growth.

Users and vendors are moving to interconnect public and private E-mail nets to exploit the benefits of electronic messaging. According to David Whitten, marketing manager for electronic messaging at Digital Equipment Corp., messaging has evolved from a means of linking individuals in work groups and departments to supporting communications among users across a firm and within other companies.

Users are saying, "My job doesn't end inside the company," said Whitten, who spoke at the recent Electronic Messaging Association conference here.

Increasingly, vendors are offering tools to help users expand the reach of their E-mail nets to other sites and firms. For example, AT&T was among the vendors at EMA '89 to announce products that aid in linking E-mail systems. AT&T unveiled AT&T Mail Private Message Exchange/Distributed Directory Service software that enables a user to create a centralized directory of messaging addresses.

"The ability to access a common directory will be a tremendous asset to a user who wants to exchange mail with someone on a different system but who doesn't know how to reach that person," said Bill Nelson, AT&T director for marketing, planning and sales support.

AT&T's strategic tool for interconnecting E-mail islands is the X.400 standard, said George Cunningham, AT&T division manager for messaging. X.400 is the Open Systems Interconnection messaging standard.

"X.400 is the vehicle that will break these islands down," Cunningham said.

Because installing X.400 gateway software can be expensive or difficult, some users have shied away from linking independent E-mail nets, said Valerian Podmolik, vice-president and general manager of messaging at Telenet Communications Corp. Telenet runs the Telemail electronic mail network.

While all major E-mail vendors are taking steps to meet user needs to interconnect separate E-mail nets, there are impediments. A lack of sophisticated directory systems is among the problems holding back more widespread interconnection, said Philip Walker, vice-president for external affairs at Telenet. ◼

Voice-Tel uses franchising

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For its services, Voice-Tel charges a flat fee of $17 to $25 per month for a single mailbox. Monthly rate discounts are available for companies that use more than 10 mailboxes.

Voice-Tel's target customers are businesses with 25 to 250 employees. "Because we're local, we can provide [these businesses with] ongoing training and support," Feuer said. Voice-Tel also provides applications of its services tailored to specific industries, such as banking and insurance, he said.

The cost for a franchise ranges from $49,000 for a sales territory of about 9,000 businesses, to $210,000 for a metropolitan franchise that includes seven to 10 sales territories. Franchise owners also pay a monthly royalty fee of between 6% and 10% based on their sales volume to Voice Enterprises.

Owners of metropolitan franchises are required to purchase the voice-messaging equipment to serve their area, while smaller franchises can either purchase the service from an adjacent metropolitan franchise or buy their own equipment.

The Voice-Tel franchises use modular equipment from Centigram Corp., based in San Jose, Calif., that can be configured to serve from 10 to 10,000 subscribers, Feuer said. Franchise owners benefit from bulk purchasing power when buying equipment and administrative supplies, and can then pass those savings on to users, he said.

Voice-Tel already faces competition from other service providers such as GTE Corp., Wang

Communications, Inc. and Tigon Corp., which was recently acquired by Ameritech.

But Feuer said he is not worried about entry of the regional Bell holding companies or AT&T into the voice-messaging market. "RBHC involvement will improve market awareness," but they are not likely to pose a threat to Voice-Tel franchises. "Phone companies are good order takers but not good marketers."

Mireille Dinant, research analyst at Probe Research, Inc., a market research firm in Cedar Knolls, N.J., said she believes the Voice-Tel franchises will be able to hold their own against their competition because "they are very close to the market."

"If the company keeps servicing their customers locally and [stays] customer-oriented," the Voice-Tel franchises should be successful, she said.

Company sees IBM deal as plus

continued from page 9

portunities" that the IBM deal offers the company (see graphic, page 9).

The first is the codevelopment aspect of the agreement, under which Consumers Software will offer a version of Network Courier that gives DOS workstations access to OfficeVision's E-mail capability. The software will use the SAA-compliant Common User Access interface. The deal also gives Consumers Software "access to future IBM architectures and directions" that will help the company in developing products, Grushcow said.

In addition, IBM's sales representatives this summer began offering Network Courier as Big Blue's DOS-based E-mail product under IBM's Cooperative Software Marketing Program, Grushcow said. IBM sales representatives will take orders on behalf of their customers, conduct joint sales calls with Consumers Software and earn commissions on the sales.

Grushcow declined to say how much product IBM has sold to date but said, "Sales are going quite well."

Analysts speculated that IBM's sales representatives have not pushed the Consumers Software products as hard as Grushcow would have hoped but that this will change as OfficeVision products become available.

"The net result of this endorsement is that Network Courier is IBM's preferred third-party solution for DOS-based messaging applications," Grushcow wrote in the letter to customers. "If DOS users are concerned about future SAA compatibility, Network Courier will be there to assure customers of both interoperability and future migration to OfficeVision."

The relationship with IBM should give Consumers Software a marketing boost in its neck and neck battle with cc:Mail for the top spot in the local network E-mail market, Atlas said. Consumers Software is best known for its technology, whereas cc:Mail is praised for its marketing skills, he said.

Even if the IBM partnership fails to live up to expectations, Consumers Software is well positioned to play in the emerging Open Systems Interconnection market, said Eric Arnum, editor of the "Electronic Mail & Micro Systems" newsletter. For example, Consumers Software recently unveiled an X.400 gateway ("Consumers Software adds X.400 messaging gateway," *NW*, Oct. 2).

The Consumers Software agreement prevented IBM from having "to reinvent the wheel" in the DOS-based local network E-mail market, said Vince Golletti, senior product administrator for local network systems at IBM in Atlanta. "We're able to offer our customers some additional choices," he said.

According to a new report on OfficeVision from Computer Technology Research Corp., a Holtsville, N.Y.-based market research firm, "Since there are over 20 million DOS-based PCs in existence, it was critical that IBM include them in the OfficeVision strategy."

But analysts warned that working with IBM has its risks. They cite the case of Sytek, Inc., which was signed on to manufacture IBM's PC Network, but was dropped when IBM began emphasizing its Token-Ring local network. "It became clear that Sytek's products were not strategic products for IBM," Arnum said.

"There's nothing stopping IBM from coming out with a DOS solution, though it's unlikely since its SAA strategy does not include DOS," he said.

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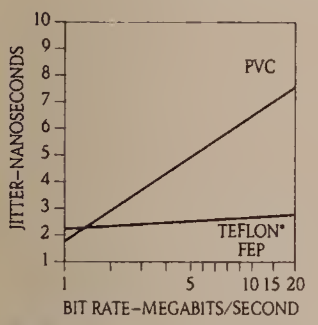

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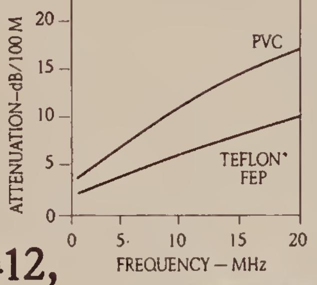

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TELECOMMUNICATIONS

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Worth Noting

The average cost of business telecommunications declined slightly during the third quarter of this year, according to CCMI/McGraw-Hill Information Services Co. The 0.1% decrease followed a second-quarter drop of 1%.

Carrier Watch

AT&T was awarded contracts worth $191 million to build half of a fiber-optic cable across the Pacific Ocean. The carrier claims the cable, dubbed TPC-4, will double the number of telephone circuits between North America and Japan. Scheduled for completion in 1992 at a cost of $372 million, the new cable will connect the U.S. and Canada with Japan. The 9,843-km cable will have six optical fibers and will accommodate voice, data and video.

AT&T will own about one-quarter of the cable; the balance will be owned by telecommunications companies in 23 countries around the world. AT&T already has 5,000 satellite circuits and 1,000 coaxial cable circuits across the Pacific. All the circuits can handle voice and data traffic. Landing points will be Port Aberni, British Columbia; Point Arena, Calif.; and Chikura on the island of Honshu in Japan.

Teleport Communications Boston (TCB), a bypass services provider, recently completed construction of its fiber-optic network, identified three new customers and announced general availability of a DS0 64K bit/sec service. The fiber network serves Boston's financial district and its Back Bay area. TCB said new customers include Colonial Management; Tri-Star Communications, Inc., a Montgomery Securities Co.; and US Sprint Communications Co. ☑

College tests ISDN as way to bridge remote local nets

Service supports dedicated and dial-up links.

The second of a two-part series.

By Jeffrey Fritz
Special to Network World

There are several ways that Integrated Services Digital Networks can be configured to connect local net bridges. Each has its advantages and liabilities.

Some users, for example, may elect to connect bridges via "nailed up" ISDN links, which are Basic Rate Interface channels that are established and maintained as dedicated links.

Nailed up links typically would be used when the source bridge is always connected to the same destination. However, changing the destination address cannot be an everyday occurrence, as it requires the telephone company's involvement.

Circuit-switched dial-up connections allow the user to access a variety of destinations. Links can be configured according to traffic needs from day to day or even hour to hour. Some ISDN terminal adapters, such as the Fujitsu America, Inc. SRS-410 used for our tests, provide nailed up or circuit-switched service with manual entry or preset dialing.

In manual mode, the user simply enters a destination number to establish the call. With preset dialing, the user can preprogram the destination number, have the adapter watch for the Data Transmit Ready signal from the bridge and automatically reconnect the link if a failure causes it to drop. When the bridge is off-line, the connection will drop, freeing up switch resources. Depending on local tariffs, this could result in some cost savings.

The B channel packet

Of great interest is the development of dynamically allocated, multiple-destination links that can be supported on packetized B channels. We were not able to test this application because our ISDN switch does not currently support packet data on the B channel. However, this configuration could provide significant enhancement to bridged networks.

In theory, a lookup table would be maintained by the ISDN bridge, and the bridge would use the table to correlate a physical Ethernet address with a 10-digit

(continued on page 16)

Fritz is a data communications analyst at West Virginia University in Morgantown.

WASHINGTON UPDATE

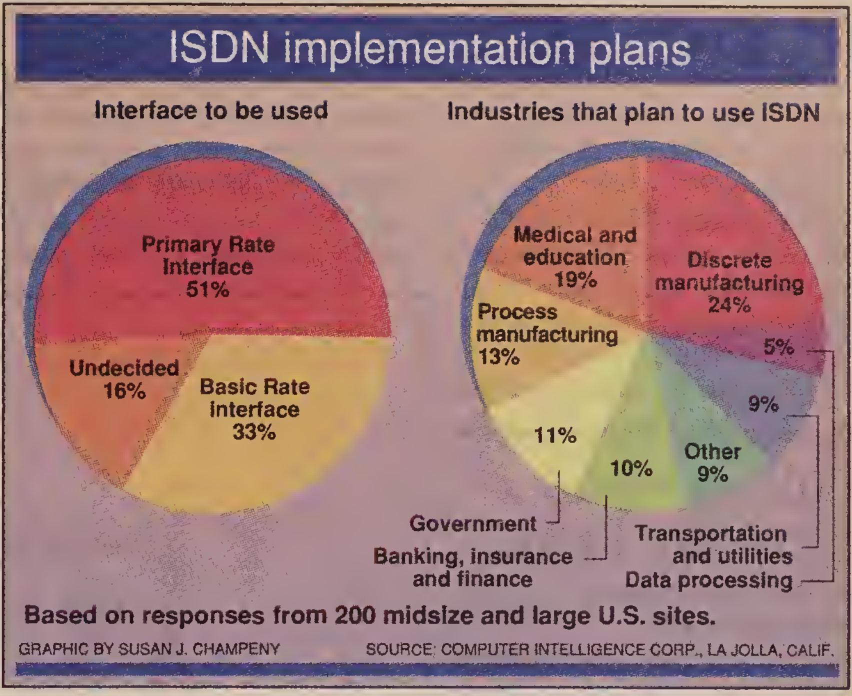
BY ANITA TAFF

FCC to investigate AT&T's dominant status. The Federal Communications Commission will begin an investigation into AT&T's status as a dominant carrier by the end of this year, according to FCC Chairman Alfred Sikes. In a recent address to the Competitive Telecommunications Association, Sikes said he wants to rework current rules, "which encourage long-distance competitors to use the regulatory system rather than the marketplace to fight their competitive battles."

He said FCC figures show that AT&T has lost about 3.3% market share each year for the last five years. Given this "major change" in the industry, few would argue that the long-distance market is fully competitive, especially for large customers, Sikes said. In reaching a conclusion on the regulation of AT&T, Sikes said the FCC will attempt to strike an appropriate balance between protecting ratepayers and removing impediments to competition.

The electronic states of America. U.S. Rep. Edward Markey (D-Mass.), chairman of the House Subcommittee on Telecommunications and Finance, sounded the alarm recently about the ability of the U.S. to compete globally. At a luncheon meeting of the Federal Communications Bar Association, Markey proclaimed, "We are going to have to become the electronic states of America."

He explained that telecommunications services will be essential if U.S. firms are to keep up with the rest of the world. Markey said he is troubled by the lack of a coherent national policy on telecommunications. ☑



ISDN implementation plans

Interface to be used

Industries that plan to use ISDN

Based on responses from 200 midsize and large U.S. sites.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: COMPUTER INTELLIGENCE CORP., LA JOLLA, CALIF.

Users band together for service discounts

Companies can save with aggregated traffic deals but should beware possible billing fraud.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — By taking advantage of arrangements that allow companies to pool traffic to receive volume discounts, long-distance customers are realizing the truth of the adage "There's strength in numbers."

So-called aggregation deals are available from the Big Three carriers and from noncarrier companies that act as intermediaries between carriers and groups of users that want to pool their traffic to qualify for discounts.

Aggregating traffic lets users save up to one-third on the cost of standard voice services such as WATS, dial 1, 800 service and even more advanced offerings such as virtual net services. Typical targets for such deals have been trade associations, professional associations, universities and health care providers.

Although the deals from the the major carriers — generically referred to as affinity offers — are straightforward, consultants warn that not all third-party aggregators are created equal. Many do not provide troubleshooting or customer service, leaving users to iron out problems with the carriers.

Others, such as Midwest Communications Exchange, provide users with a single point of contact.

Cleveland, Ohio-based Mid-

(continued on page 17)

Rolm users group forms new support committee

By Bob Wallace
Senior Editor

SAN JOSE, Calif. — The National Rolm Users Group's (NRUG) formation of a committee to find products that increase the functionality of Rolm Corp. CBX 8000 and 9000s topped the list of developments at the group's recent conference here.

Meeting for the first time since IBM and Siemens AG finalized their Rolm PBX partnership in August, officials from Rolm Co., the newly formed sales and service company, told attendees it will market its wares by vertical industry and product brand, and will offer more competitive prices on the IBM 9751 CBX and add-on systems.

Ray AbuZayyad, president of Rolm Systems, Inc., promised representatives from 160 companies at the meeting that his company will work to speed up product development. Rolm Systems, a subsidiary of Siemens AG, was formed to handle development and manufacturing of PBXs and related products.

Users "were pleased and very positive about the new developments," said NRUG President Jay Silverberg. Silverberg is a branch controller for First Data Resources, Inc. in Lake Success, N.Y.

(continued on page 16)

Rolm group forms committee

continued from page 15

The new NRUG committee, charged with the task of identifying needed add-on products, includes users of the CBX 8000 and 9000, an executive from the switch sales and service group, as well as software and hardware vendors.

The group will locate products that enhance the private branch exchanges and share the information with the general membership at each NRUG conference. CBXs are still widely used but may not be enhanced by IBM/ Rolm, Silverberg added.

No more R&D

"Rolm has said it would not spend any significant amount of money on research and development for the [CBX II]. We realized there is a strong need for products that enhance the functionality of these PBXs," Silverberg said.

"I think most users have accepted the fact that there will be no major development" of the CBX 8000 and 9000, he said.

Rolm Co. briefly outlined its PBX marketing strategy at the meeting.

The company said it has assigned a manager to each major vertical market and appointed brand managers to each product, including its automatic call distributor products and Phonemail, according to Silverberg.

No additional details were available.

Better customer support

"This should help [Rolm Co.] address product-specific issues faster," said NRUG officer Michael Seitz, a regional telecommunications manager for Eastman Kodak Co.

"In his closing speech, [Abu-Zayyad] said his company will provide new products faster and at a more competitive price than in the past," Seitz said.

Attendees viewed demonstrations of several products announced by IBM in August, including the IBM 9751 CBX Model 10 switch, Phonemail Release 4.0 and the IBM 9722 Redwood Model 3 low-end PBX, Silverberg said.

College tests ISDN for LANs

continued from page 15

telephone number.

For example, if the bridge knew that Ethernet address 03370101BB19 is at destination number 3045551212, it would place the destination number into the B channel packet header. The ISDN switch's packet handler then knows exactly where that packet is to be routed.

Of course, this proposed solution is futuristic. It does not address what the link should do with multicast and broadcast traffic. Such traffic must be duplicated and sent to several destinations. Because the ISDN switch cannot duplicate traffic, that task may have to be done by the source bridge. Unfortunately, this is somewhat inefficient.

ISDN as a LAN bridge?

At first, the idea of linking two 10M bit/sec Ethernets with a 64K bit/sec link was frightening. We feared severe bottlenecks and the collapse of Ethernet sections.

Those with more experience would have told us that 64K bit/sec bridging is possible. They would have pointed out that rarely does an Ethernet operate at full capacity. In fact, it has been said that Ethernet utilization rarely exceeds 20% of peak capacity.

Bear in mind that this 20% represents the total intranet traffic; traffic over bridge links is far less. Therefore, it is indeed possible and even beneficial to use ISDN as an Ethernet bridge link. The key is in determining whether the internet traffic is appropriate for the bandwidth of ISDN.

Consider the case of a high-production Ethernet that supports large file transfers across a bridge. Clearly, ISDN cannot serve as the primary link in applications that require at least T-1 capacity. However, ISDN can play a backup role. If the main link fails, ISDN provides stopgap connectivity until the link can be restored. In cases where the bridge is only used for interactive queries, a stand-alone ISDN link makes sense. In such cases, the internet traffic might waste the capacity of a T-1 link. Should growth require it, additional B channels can be used to increase the bandwidth.

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Users together for discounts

continued from page 15

west Communications recently worked with the American Bankers Association to cut a deal with AT&T, through which the association's members can save about 15% on the cost of long-distance service.

Midwest Communications also has another aggregation arrangement that involves about 200 companies, including Harris Wholesale Co. in Cleveland. Harris Wholesale was one of Midwest Communications' initial customers.

Since completing installation of the service two years ago, Harris Wholesale, a national distributor of health care products, has saved about 20% annually on voice services, according to Raymond Sizemore, vice-president of information services. For fiscal 1990, he said, Harris Wholesale's service costs will remain flat, even though most companies will see their communications costs rise about 9%.

Sizemore said Midwest Communications handles orders for new service, provides a help desk for problems and provides network design services. He only has to call one place if something goes wrong, he added.

Another differentiating factor between aggregators is how they handle billing. Some have the carriers bill customers directly, while others get bills from carriers and compile customer charges themselves. In this case, aggregators might be the only ones to see the original bill, opening the door to possible fraud, said Duffy Mich, president of RTP Group, Inc., a network design consultancy in Pasadena, Calif.

Mich, who has appeared as an expert witness in court cases involving telecommunications fraud, said he is aware of aggregators that do their own billing and intentionally inflate the length of customers' calls by as much as 10% over the times listed on carrier's records.

"There's all kinds of algorithms out there being used to steal money from customers," Mich said.

This type of fraud is difficult to detect, Mich said. "How many customers would remember that they made a 3.4-minute call instead of a 3.9-minute call?" he asked. Even private branch exchanges that compile detailed call records can vary in accuracy. "All call-accounting systems guess at the length of the call," he said.

Even if customers had a call-checking method that was 100% accurate, the work involved in comparing the bills might not be worth the effort, said Paul Kirvan, an independent consultant with Kirvan & Associates in Turnersville, N.J. "I don't think the perceived benefit [of purchasing services through aggregators] is worth the additional hassle it probably represents," he said.

The amount of time telecommunications managers have to devote to auditing aggregators' bills, the less time they have for other responsibilities, he said.

Other caveats

In addition to outright fraud, users should be aware of other aggregator policies that could cost money. For example, if the aggregator uses an alternative operator service that charges high fees, customers could find savings in one area being taken away in another, Kirvan said.

"Users may begin to wonder if they're dealing with traffic aggregators or traffic aggravators," Kirvan said.

However, Ron Brown, an independent communications consultant in Melrose, Mass., said he believes aggregator arrangements are beneficial to users. "I don't really see a big negative," he said.

By using an aggregator, small and midsize companies are able to get discounts and, in some cases, specialized service and maintenance previously available only to the largest users, he said.

Brown downplayed the concerns about intentional fraud, saying, "Of course, someone can always cheat the customer, but I believe, by and large, people are honest." And because there are many aggregators to choose from, customers can always go to a competitor or back to the carrier if they believe they are being cheated.

Customers that think they have been cheated can also seek help from the courts, Brown said. "If [aggregators] are knowingly misbilling customers, that's called stealing, and they end up in jail," he said.

for Microcom
finished.

Digital Centrex Service. Along with call accounting software from our Telco Research subsidiary. For their personal computers, they came to NYNEX Business Centers.

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cfSOFTWARE – pcMAINFRAME

BLAST – XENIX, UNIX, DOS

CQ COMPUTER COMMUNICATIONS – CQ-327OR-4

CTI-COMMUNICATIONS – 3780FAST

CPAID – Master Tax/ Electronic Tax Filing

D3 SOFTDESIGN – Sync Tax, BSC 3780, Sync-Claim

EASTHAM & ASSOCIATES – UNISYS Basic Emulation

EMERALD TECHNOLOGIES – 3X Mate
3X Mate UNIX

FORETELL – ESP II, EDI FACT

MICRO INFORMATION SYSTEMS – ECS Electronic Claims System

NETWORK SOFTWARE ASSOCIATES – Remotetalk, ADAPTSNA, 3270 V4, LU6.2 V4, LUO V4, RJE V4, API, HLLAPI

TECHNOLOGY DEVELOPMENT SYSTEMS – Softmail Electronic Mail

STERLING SOFTWARE – PC-TRACS 3770AF, PC-TRACS 3780

TAXWARE SYSTEMS – Tax Preparation Packages, Electronic Filing

TDT GROUP – SIX/25 3270/3770, X.25, XENIX 286/386, Transfile, PC 3780

TROPICAL COMMUNICATIONS – pcX 25

UNIVERSAL DATA SYSTEMS – BSC, DIAL, SNA 3270, SNA 3770, SNA 4251

CLEO – Datatalker 3270, SNA/SDLC, Datasync 3270, Datasync 3780, UNIX 3780

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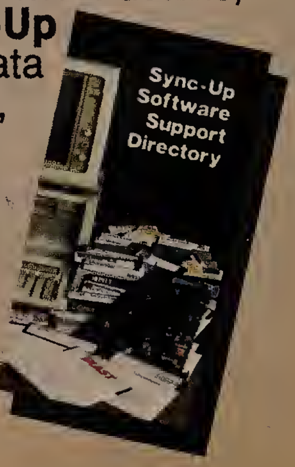

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MOTOROLA INC.
Information Systems Group

See the FAXNeT Form on Page #53

DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

Amadeus, a European airline reservation network, last month surpassed the one million monthly transaction level for the first time ever. Amadeus, which uses software developed by Texas Air Corp. subsidiary System One Corp., enables travel agents throughout Europe to book flights on 24 major airlines.

Data Packets

Unisys Corp. and **Bus-Tech, Inc.** last week announced they jointly developed a controller that enables Unisys 1100 or 2200 series mainframes to communicate over IEEE 802.3-compatible Ethernet local nets. Unisys and Bus-Tech worked together to develop the Host LAN Controller (HLC), a revamped version of Bus-Tech's Ethernet LAN Controller, which lets IBM mainframes communicate over 802.3 Ethernets.

The HLC connects to the block multiplexer channel of Unisys 1100 or 2200 mainframes; it can transmit data between mainframes at speeds up to 4M bit/sec. Unisys will sell HLC under an OEM agreement for $20,000.

Videotelecom Corp. recently tested the H.261 videoconferencing standard, which defines an algorithm for transmitting compressed video images between video coder/decoders (codec) over a single 64K bit/sec line or multiple 64K bit/sec DS0 channels on a T-1 circuit.

The test linked Videotelecom codecs at the vendor's office in Austin, Texas, and at Bell Communications Research laboratories in Livingston, N.J., via a 64K bit/sec circuit. A BELLCORE official said the test proved that H.261 provides high-quality video communications.

Images go E-mail

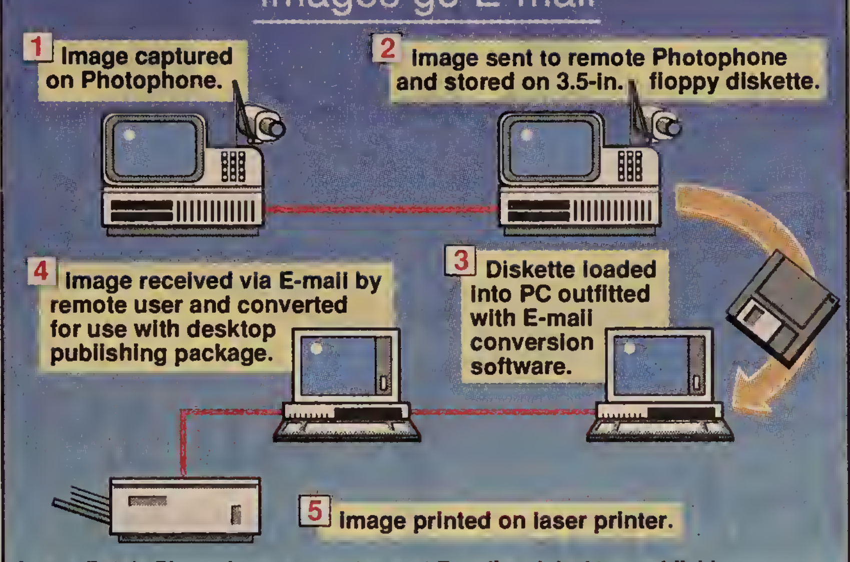
1 Image captured on Photophone.
2 Image sent to remote Photophone and stored on 3.5-in. floppy diskette.
3 Diskette loaded into PC outfitted with E-mail conversion software.
4 Image received via E-mail by remote user and converted for use with desktop publishing package.
5 Image printed on laser printer.

Image Data's Photophone supports most E-mail and desktop publishing packages, enabling users to integrate images with text over a network connection.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: IMAGE DATA CORP., SAN ANTONIO, TEXAS

Software merges images with desktop publishing

Offering uses E-mail to transmit video images.

By Paul Desmond
Senior Writer

SAN ANTONIO, Texas — Image Data Corp. recently announced two software packages that integrate images captured with its Photophone video telephone with most electronic mail and desktop publishing products.

One offering, Image Package Utility, runs on a DOS-based personal computer and converts compressed images captured by the Photophone into a DOS file format so users can transmit images to local or remote users using any E-mail package that accepts DOS files.

Image Data's other new product, Tag Image File Format (TIFF) Conversion, is software that converts Photophone image files to the industry-standard TIFF files that are accepted by most desktop publishing packages. The software enables users to incorporate Photophone images in reports, technical papers or other published documents.

Photophone is designed to send complex still images over an ordinary voice-grade phone line. It comes with a video camera-based system that captures the image, digitizes it and compresses it for transmission to a remote Photophone.

"It's like a fax, but it's dealing with three-dimensional objects and video images as opposed to flat paper," a company spokesman said.

Images captured by the Photophone are stored on a 3½-in. diskette. To use either of the two new software packages, the user removes the diskette from the Photophone and inserts it into a personal computer.

The newly announced Image Package Utility converts the compressed image data into a DOS file format that is accepted by most E-mail packages so users can transmit files to other E-mail users. The ability to send images via E-mail gives the sender more flexibility in using the images. For example, a sender can broadcast a single image transmission to several recipients.

E-mail also gives the sender verification that the image file was received and lets the recipient view it at any time, which can be especially important when the sender and recipient are in different time zones.

Traditionally, Photophone users view images at the time they are received and then store the image on a diskette.

Images received using the Image Package Utility can also be converted to TIFF using the company's TIFF Conversion software, which also runs on a DOS-based personal computer. TIFF files are supported by most major desktop publishing packages such as Aldus Corp.'s PageMaker and Xerox Corp.'s Ventura Publisher.

Images received via E-mail cannot be converted directly to TIFF; they must first be converted to the compressed data format accepted by Photophone. That conversion can be performed on the same personal computer that is running the Image Package Utility.

Once converted to TIFF, an image can be printed via laser printer or integrated with text using desktop publishing software. For example, the Photophone image could be used as part of a report documenting design changes in a manufacturing process by including images that show those changes.

The new software packages are available now for $195 each. The Photophone costs $10,000 for a black and white version and $17,000 for a color version.

HP preps Unix-based integrated OpenView

Net control tool will merge data on third-party, HP devices onto X/Windows terminal screen.

By Jim Brown
Senior Editor

PALO ALTO, Calif. — Hewlett-Packard Co. is putting the finishing touches on a Unix-based version of its OpenView network management system that will support integrated net management functions.

In addition to monitoring and controlling HP systems, the new Unix-based net management system will supervise third-party network devices, displaying all the data in a single system image on an X/Windows-based workstation.

The system, which will run on HP's Unix-based workstations and minicomputers, is scheduled to be announced by year end.

The Unix-based net management system will combine the functions of HP's DOS-based OpenView packages with the functions found in its OpenView Windows. The OpenView packages — OpenView Status and Diagnostic Monitor, and OpenView Performance Monitor — run on a personal computer and manage HP minicomputers and workstations, while OpenView Windows is used to control third-party net management subsystems.

Currently, users must toggle between different screens on a DOS-based net control console to view management data from each of those network elements. HP will continue to offer the DOS-based packages.

The new software, with its Unix multitasking capabilities, will be able to merge all those activities into a single net management screen. "What we've been very busy doing, and what we said was our intention for the next step, was to move OpenView onto a Unix base," said David Mahler, product marketing manager for OpenView.

The Unix-based version of OpenView will position HP to compete against IBM, AT&T and Digital Equipment Corp. in the integrated network management arena, Mahler said.

(continued on page 22)

T-1 backbone keeps Key in pace with expansion

By Paul Desmond
Senior Writer

ALBANY, N.Y. — Faced with staggering growth, Key Services Corp. recently completed the installation of a T-1 backbone that promises to keep pace with the company's rapid expansion.

As parent company Key Corp. forged ahead with its acquisition of banks in several states, Key Services was charged with supplying data and voice transmission services for the new sites.

To do so, Key Services installed a 24-node T-1 backbone that promises to keep costs down while supporting a user base that is expected to triple in size over the next three years.

In addition, Key Services is installing new modems that can support three different protocols simultaneously, allowing it to consolidate traffic from teller terminals, automated teller machines and bank security systems onto the same multidrop lines.

Key Services provides banking operations and data processing support for Key Corp., a national bank holding company based here that owns 14 banks in 11 states with a total of more than 560 branches, said Frank De John, department manager of corporate telecommunications planning for Key Services. Key Corp. has grown from a $4.7 billion company five years ago to a $14.6 billion company today.

To support the parent company's needs, Key Services operates three data centers: one here, another in Augusta, Maine, and a third in Portland, Ore. Each is outfitted with an IBM 3090 mainframe that supports terminals at bank sites.

Until about two years ago, the only part of the Key Services net that could be classified as a backbone was a 224K bit/sec satellite link between the three data centers, De John said.

That satellite net now provides some voice channel capacity, supports special applications such as videoconferencing and acts as a backup to the terrestrial T-1 net, he said. "As rates dropped for terrestrial service, the satellite became less and less cost-effective for us," De John said. "It was just a natural choice

(continued on page 22)

The ISDN

Showcasing ISDN applications

BY JEAN S. BOZMAN
CW STAFF

SCOTTSDALE, Ariz. — AT&T last week drew major computer vendors into its quest for MIS and
support for ISDN techn
After years of prepar
ble to showcase Inte
Digital Network (ISDN) a
quipment from such main
ors as Tandem Computers,
quipment Corp. and Wang La
c.
AT&T executives demo

that gathers calls from multiple user loca-
tions — even those in an IBM Systems
Network Architectu
can exchange

ISDN applications come alive at ICA

Dawn Bushaus, Assistant Editor

Vendors at the International Communica-
tions Association convention last week
telecommunications history when
demonstrated a live

An ISDN Opportu

EDITORIAL

telephone companies and end users gathered in Scotts-
to get a firsthand look at what AT&T
industry-specific ISDN applications, they

technology But
Oddly enough, A
the consultant a
What AT&T
attendees at Net
program, AT&T
telecommunicati
Admittedly, th

AT&T, others offer w of ISDN products at d

By John Cox
Senior Editor

SCOTTSDALE, Ariz. — AT&T last week demonstrated a battery of new and existing Integrated Services Digital Network products at NetPower '89, an exhibi-
tion designed

features such as Incomi
Line Identification.
$995, the product will
able in April.
NetLine, Inc

ISDN STEALS SPOTLIGHT AT ICA SHOW

Twenty thousand people and more than 300 exhibitors are expected at the Dallas extravaganza April 30-May 5

RE than 300 exhibitors and
n anticipated 20,000 peo-
le will flock to the Dallas
Center the week of April
2nd Annual ICA Confer-
osition.
g this year's
show is

ICA ISDN Demo: N

EDITORIAL

There was a lot of talk and, actually, a lot of action about
integrated services digital networks at the International Commu-
in Dallas last week.
ICA ISDN showcase,
Telephone Co.,
of ISDN techno-

At times during the
Southwestern Bell tech
considered the impro
work, or, at the least,
Indeed, a week ago,
Microcom Inc. officials
that the AT&T 5ESS
demo wasn't working
supports ISDN at Mic
Some fine-tuning was
integrated song.
More than

AT&T confirms, expands ISDN commitments

AT&T To Let Telcos Offer Users Free ISDN

BY BETH SCHULTZ

SCOTTSDALE, ARIZ. — AT&T Network Systems last week said it will give its telephone company customers the chance to provide their users with free ISDN service on a trial basis.

AT&T introduced its Customer Opportunity Program at last week's NetPower '89 trade show here, which featured AT&T central office equipment and third-party supplied applications for integrated services digital networks (*CommunicationsWeek*, March 13).

AT&T Network Systems' new program is a two-pronged offering that will let the company's Bell operating company and other telco customers introduce end users to ISDN—at AT&T's expense

under which telcos,
are developing ISDN
Although AT&T's
ment was the centerp
NetPower event, it was
highlight.
Robert Cooper,
rector with Rochester
Rochester, N.Y., said
NetPower are essential
out of the labs and
Rochester Telephone
interest in NetPower,
cent of its access
AT&T 5ESS switche
tions AT&T put toge
are applicable to sev

'A 'try it; you'll like it approach' may be the

AT&T To Spotlight 11 ISDN Appli

BY BETH SCHULTZ

SCOTTSDALE, ARIZ. — AT&T Network Systems plans to showcase 11 new ISDN applications for telephone companies and business customers at the first NetPower '89 ISDN forum here this week.

Although AT&T in the past has been involved in forums covering integrated services digital networks, NetPower '89—AT&T's own event—is different, an AT&T spokeswoman said. The company will highlight industry-specific solutions it developed in cooperation with local telephone companies and third-party vendors, using off-the-shelf products.

"This is a way to explain to telcos and end users how ISDN centrex can make the PC [local area network] more productive," she said.

Each of the 11 applications will be demonstrated in settings that depict elements typical of that environment, including customer premises equipment. The security application, for instance, will include a security guard location, a security supervisor office and a central database location.

NETPOWER '89 PARTICIPANTS

Source: AT&T

AT&T spokeswoman
In addition to those
demonstrations, 27 ve
ble products. Some o
for the first time an
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Prodigy Services
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spokesman for the
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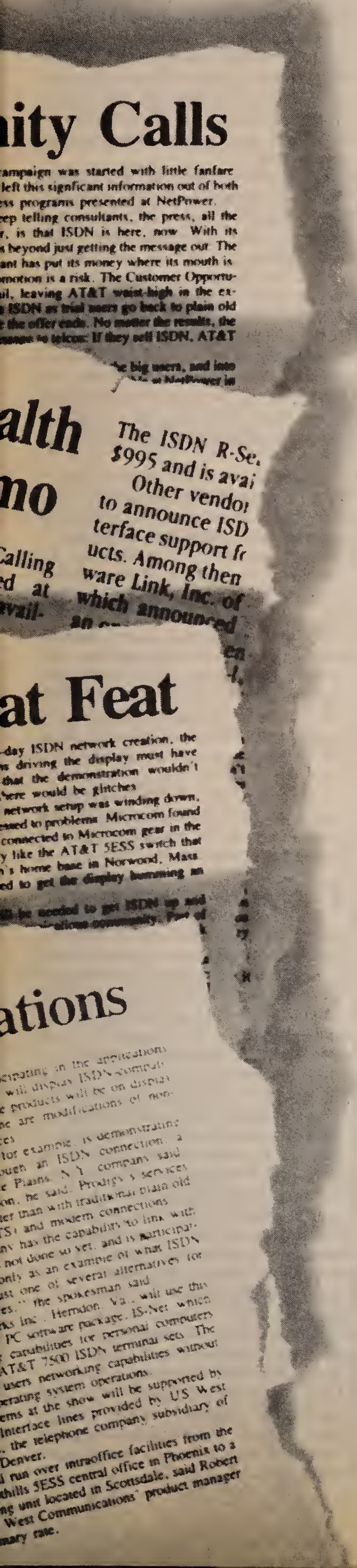
Scorecard

(Part 2)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ations

Who's really putting ISDN on the map? If you've seen the headlines, you know the score.

You only have to scan the trade press to see who's the clear-cut ISDN leader. The company that helped build the standards for ISDN. The company that's helping local telephone companies turn the promise of ISDN into Real-World Solutions. The company: AT&T.

95% of ISDN lines are on an AT&T 5ESS® switch

AT&T Network Systems has helped more local telephone companies install more ISDN lines than any other telecommunications supplier—some 95% of non-trial ISDN lines. What's more, we've already shipped over 260,000 ISDN lines for future use.

Today, 162 central offices can offer operational ISDN services from the AT&T 5ESS switch—with 618 upgraded with ISDN software. Combined, these central offices have the potential to offer ISDN services to 13.5 million telephone company customers.

So, while most other suppliers are still in product development trials, AT&T Network Systems is helping phone companies across the nation offer Real-World ISDN services right now. Services such as simultaneous voice and data transmission, high-speed facsimile and electronic mail—all over a single phone line. Services that utilize your existing telephone network to dramatically increase productivity and efficiency for businesses, from hospitals and insurance companies to investment, publishing and law firms.

ISDN is just the beginning

We believe that ISDN is the beginning of an even bigger future. A future we call Universal Information Services. A future where networks will be able to meet complex communications needs for voice, data and image—simply and economically.

At AT&T Network Systems, this belief is already driving our technology, our product development, and our commitment to you.

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AT&T
The right choice.

T-1 backbone keeps Key in pace

continued from page 19

to go on the ground."

Key Services' new T-1 backbone is based on General DataComm, Inc. Megamux-Transport Management System T-1 multiplexers. The backbone supports the three data centers plus 21 other sites in 11 states. The net is configured in a delta star topology that consists of centralized nodes in each of 14 banking regions, which are interconnected in a mesh design. From each regional node, T-1s extend in a star configuration to support smaller sites.

The T-1 backbone supports voice, data and image applications, and can dynamically route around failed nodes or links, relying on satellite backup when necessary, De John said.

With the T-1 net in place to keep costs down for high-speed circuits, Key Services is now looking to further cut costs by consolidating traffic on the multidrop lines that serve its bank branches.

To each branch, Key Services has to support three devices and protocols: teller terminals, which use IBM's Systems Network Architecture/Synchronous Data Link Control protocol at 4.8K bit/sec; ATMs that use IBM 3270 Binary Synchronous Communications at 2,400 bit/sec; and security devices that use a polled asynchronous protocol at 600 bit/sec.

"In a typical network, that would require three independent data circuits," De John said. "We've consolidated those three applications onto a single facility, reducing our costs by two-thirds." ▣

HP preps Unix-based integrated OpenView

continued from page 19

While IBM, AT&T and DEC require third-party vendors to develop a link from their respective net management subsystems to NetView, Accumaster Integrator or DEC's Enterprise Management Architecture (EMA) products, HP will offer developers a choice of options.

First, third-party supporters of the new OpenView package can build a link from a proprietary net control subsystem, which collects information from network devices. IBM, AT&T and DEC, Mahler said, require third parties to take a similar approach when linking their subsystems to NetView, Accumaster Integrator or EMA.

Alternatively, HP will enable third-party vendors to write their own management applications that run on the Unix-based OpenView system and collect data directly from network devices, Mahler said.

Developers that write their net control application to run on the OpenView system will not have to build a stand-alone management system and then develop a link to the HP-based package.

"We're not offering a canned, closed solution," Mahler said. "We're offering a development environment in which HP and other companies can develop applications that coexist on a single platform."

The Unix-based OpenView will support a mix of network management protocols and a common SQL-based data base structure. The data structure will enable users to store management information in an SQL-based relational data base management system.

While HP's ultimate goal is to support the International Standards Organization's Common Management Information Protocol (CMIP) and Common Management Information Services protocol, initially it will support the Simple Network Management Protocol (SNMP) and the CMIP over Transmission Control Protocol (CMOT) in the Unix version of OpenView. This will enable management systems and network devices supporting SNMP and CMOT, two of the most widely used net management protocols today, to forward management data to the Unix-based OpenView.

Support for the OSI/Network Management Forum-defined protocols and proprietary protocols supported by unspecified vendors will be added later, Mahler said.

IBM, AT&T and DEC, Mahler said, require third parties to build software that supports only a single network management protocol.

HP will rely on third-party vendors to supply a good deal of the OpenView integrated network management applications running under Unix, Mahler said. IBM, AT&T and DEC, he added, will attempt to supply most of the applications that run under their respective management systems.

"We believe no one vendor — we don't care how big — can provide the total set of applications to do integrated network management," Mahler said.

A different view

Analysts, however, question whether third-party vendors will want to spend the money to develop an OpenView-based management application to control their network equipment and develop separate stand-alone net management subsystems that link to IBM's, AT&T's and DEC's integrated network management systems.

"If network equipment is only reporting to an HP system, then you're limiting yourself to being able to send information from a modem to only HP's OpenView," said Paul Li, senior analyst with Network Strategies, a network consulting practice of Ernst & Young in Fairfax, Va.

Others think HP may have trouble gaining third-party support. Analysts have been predicting that users will be more apt to purchase an integrated network management system from their primary computer vendor.

"HP doesn't have enough equipment out there for it to matter," said Dale Kutnick, president of Meta Group, a Westport, Conn.-based consulting firm. "HP's presence in the integrated network management arena is simply not that important because it doesn't have enough of an installed base." ▣

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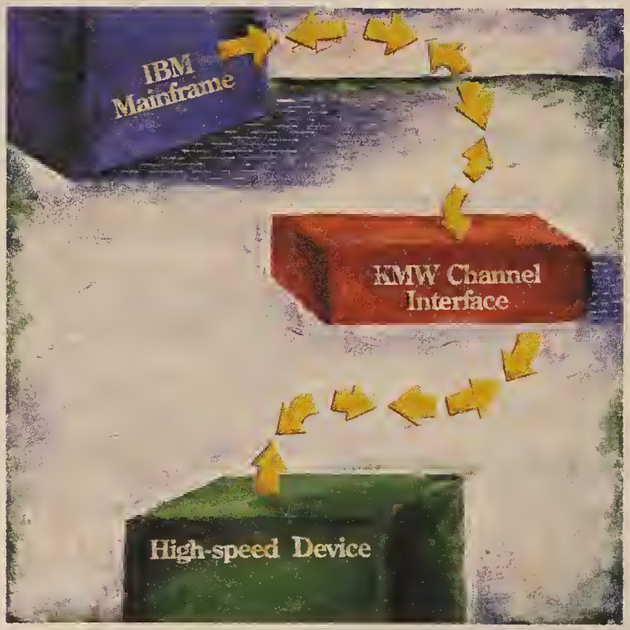

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Worth Noting

> "Deciding between 3Com's 3+Open LAN Manager and Novell's NetWare 386 was difficult. We chose 3+Open because we hope, in the long run, it's a better technical solution."
>
> **Jim Davis**
> Director of information services
> Instrument Society of America
> Research Triangle Park, N.C.

Netnotes

3Com Corp.'s second annual Network Systems Forum, slated for Oct. 29 to 31 in San Jose, Calif., will include presentations by former Novell, Inc. executive Craig Burton and Art Olbert, IBM director of client/server computing.

Burton spent eight years as 3Com's chief nemesis before disagreements with Ray Noorda, Novell's president and chairman, led to his departure from the firm earlier this year. Burton and Olbert will offer their advice to a panel of 3Com executives in front of conference attendees.

"Part of my new marketing vision is to get 3Com to face the music," said Bob Metcalfe, 3Com founder and marketing vice-president. "The biggest job I have right now is convincing [3Com managers] to get up on stage with [Burton]," he said.

Novell, Inc. recently began shipping its NE/2-32 32-bit Ethernet adapter. The NE/2-32 is the first adapter optimized to take advantage of the 32-bit data transfer capabilities of its own NetWare 386 network operating system, IBM's Micro Channel architecture and Intel Corp.'s 80386 microprocessor.

A single NE/2-32 installed in a network server provides a 50% speed increase over existing 16-bit Micro Channel network adapters, according to Darrell Miller, executive vice-president of Novell's software group. Available now, the NE/2-32 costs $995. ◪

NetWare servers use SCSI, memory-cache technology

Servers are Everex, Storage Dimensions joint effort.

By Susan Breidenbach
West Coast Bureau Chief

SAN JOSE, Calif. — Storage Dimensions, Inc. and Everex Systems, Inc. are moving into the dedicated file server market next month with the release of a jointly developed line of systems for Novell, Inc.'s NetWare.

Based on a 33-MHz Intel Corp. 80386 microprocessor, the servers combine Everex's proprietary memory-cache architecture with Storage Dimensions' Small Computer System Interface (SCSI) mass storage technology. A high-speed I/O bus operates at 16.5 MHz, while maintaining compatibility with the IBM Personal Computer AT standard.

"It will be two to three times faster than anything else on the market at the same price," said Gene Bowles, vice-president of marketing for Storage Dimensions. He said the combined strengths of the two companies have produced "the fastest Novell file server for under $12,000."

The system — sold as the STEPserver by Everex and as the FileMaster by Storage Dimensions — represents a growing class of microcomputers that are designed specifically to be file servers while staying with the industry-standard bus architecture. They offer better performance and reliability than retrofitted personal computers but don't carry the higher price tags of the new superservers with multiple processors and parallel I/O channels.

"We've taken the AT bus and pushed it as fast as it will go," said Steve Manuel, product marketing manager for Everex.

The STEPserver/FileMaster gets additional throughput from Everex's Advanced Memory Management Architecture (AMMA), which provides a scalable memory cache that can range in size from 128K bytes to 256K bytes. AMMA uses a mainframe-type write-back cache, in which the cache is updated on the same processor cycle that retrieves data from system memory.

This contrasts with the Intel write-through cache found in most IBM-standard desktop computers, which requires an additional processor cycle for the cache update. The AMMA cache

(continued on page 28)

GUIDELINES

BY ED PATTERSON

Net display stations offer more for less

The introduction of $1,000-to-$2,500 X-terminals that support the X.11 Windows standard, so-called network display stations, represents an economical alternative to $5,000-to-$6,000 networked personal computers.

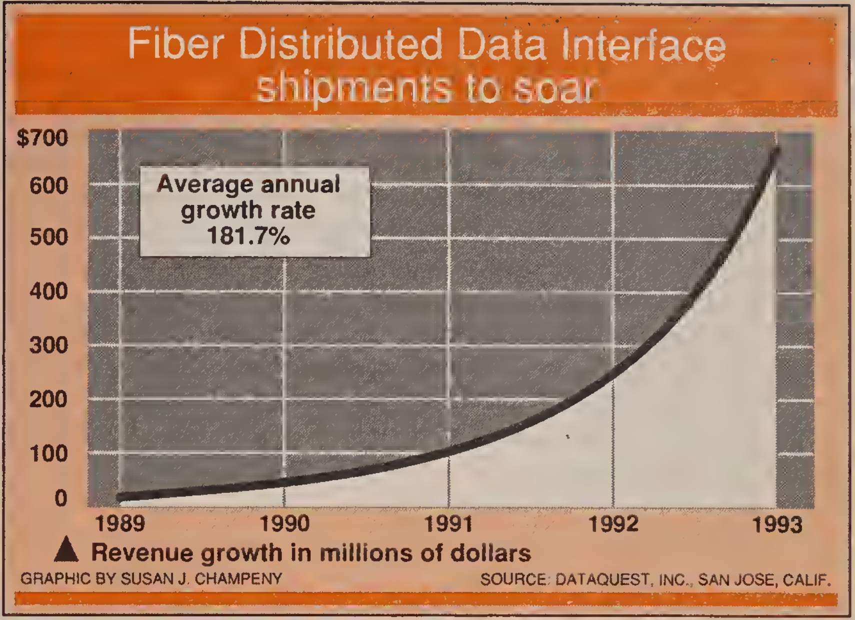
With built-in Ethernet or token-ring local network interfaces, high-resolution bit-mapped graphic displays and support for standard communications protocols, X-terminals can simultaneously display multiple output windows from programs running on any computer in the network that has software supporting the X.11 standard.

The use of network display stations to give high-performance workstation-like capabilities at dumb terminal prices does not require involvement in a backbone network. A minimal system might involve putting X-windows and multiuser support on an existing 80386-based personal computer and attaching network display stations. Besides giving Display Station users access to local resources, the server can be outfitted as a gateway to remote mainframes. In the case of IBM, this would require installation of a Synchronous Data Link Control interface, software to emulate both a 3274 controller and 3278 terminals, and a leased line to the remote host.

The overhead of the protocol gateway — translating the Transmission Control Protocol/Internet Protocol to Systems Network Architecture — and emulation functions would effec-

(continued on page 28)

Patterson is a network analyst with Lincoln Telephone and Telegraph Co. in Lincoln, Neb.



▲ Revenue growth in millions of dollars

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: DATAQUEST, INC., SAN JOSE, CALIF.

Friday the 13th goes by with nary a virus

Expected outbreaks never materialized, much to the relief of network users across the country.

By Laura DiDio
Senior Editor

FRAMINGHAM, Mass.— The hype has finally fizzled. To the collective relief of personal computer network users, Friday the 13th passed quietly with no major viral outbreaks.

The Datacrime and Jerusalem viruses, as well as a particularly nasty new virus known as Disk Killer, never materialized on the 13th as expected.

"We had someone assigned here all last week to field calls from the public regarding possible virus attacks, but we didn't get any calls at all from either government or commercial business users saying they'd been hit," said John Wack, a computer scientist at the National Institute of Standards and Technology in Gaithersburg, Md.

"Undoubtedly, some organizations were hit, but there were no widespread attacks," Wack said. "I've heard of a few scattered incidents but nothing serious."

Kenneth Weiss also said there was little or no new virus news. Weiss is chairman of the computer security division of the American Defense Preparedness Association, as well as chief technical officer and chairman of Security Dynamics, Inc., a security company in Cambridge, Mass.

While the Friday the 13th incident turned out to be hype, Weiss said viruses still represent a threat, although would-be hackers may be more wary of the law than they once were.

According to Weiss, the initial viral outbreaks — including last year's now infamous Internet Worm, which infected thousands of academic and government research computers last November — were motivated by ego and enmity.

The seven E's

"I have a checklist that I call the seven E's of computer abuse. They are: error, ego, embezzlement, enmity, espionage, extortion and eavesdropping," Weiss said. "Computer abuses, such as the viruses we've seen so far, have been largely inspired by ego and enmity, which find their greatest successes in publicity."

Weiss contends that people writing viruses think twice about infecting systems or networks because viruses are finally being considered a serious offense under the law.

> Morris is one of the first people in the U.S. to be indicted for writing a virus that illegally invaded computer systems and networks.
>
> ▲▲▲

Robert Morris Jr., the alleged author of the Internet Worm, was indicted earlier this year by a federal grand jury and is now awaiting trial in Syracuse, N.Y. Although no trial date has been set, Morris is one of the first people in the U.S. to be indicted for writing a virus that illegally invaded computer systems and networks.

"The motivation for virus copycatting dissipates when it comes in contact with legal sanc-

(continued on page 24)

New OSI/NETBIOS specification enables OSI to support PC nets

By Susan Breidenbach
West Coast Bureau Chief

While Open Systems Interconnection is being advanced as a panacea for interoperability problems in multivendor corporate networks, the viability of OSI depends on its ability to support the proliferation of non-OSI personal computer networks.

With that in mind, a committee of the Technical and Office Protocol Users Group has developed an OSI/NETBIOS Specification that lets personal computer applications run across OSI networks.

At the recent Interop '89 conference in San Jose, Calif., several network vendors making use of this specification demonstrated interoperable implementations of the Network Basic I/O System application interface running on top of OSI protocols in a multivendor network.

The companies — AT&T, Microsoft Corp., Reseaux de Communication d'Entreprise S.A. (RCE), 3Com Corp. and Ungermann-Bass, Inc. — said the NETBIOS/OSI demonstration showed that the four lower OSI layers provide an infrastructure that can support NETBIOS applications in a multivendor environment.

The full TOP OSI architecture defines standard protocols for all seven layers of the OSI model. However, the thousands of existing DOS applications cannot be accommodated by the top, or application, layer because they predate the standard.

The OSI/NETBIOS architecture thus uses only a subset of TOP OSI, consisting of the transport layer on down. However, because NETBIOS uses a low-level naming service and other mechanisms that functionally dip below the transport layer, it cannot simply sit on top of the transport layer.

The NETBIOS Special Interest Group of the TOP Architecture Committee was formed in 1987 to develop standard protocols that could turn NETBIOS names into addresses that the underlying OSI protocols could use, as well as resolve other mapping problems.

The result is the OSI/NETBIOS Specification, a draft standard that each of the network vendors in the interoperability demonstration has implemented.

Only the first step

The standard is expected to undergo one more round of revisions as a result of the experiences provided by the demonstration at Interop. It will then be published as a MAP/TOP Users Group Technical Report associated with the full TOP 3.0 Specification.

"OSI/NETBIOS represents a first step in bringing together the existing installed base of PC applications and services with OSI," said Jay Misra, 3Com's product manager for 3+Open. "Using OSI/NETBIOS, existing PC applications are guaranteed to operate unchanged over the OSI transport layers."

The OSI/NETBIOS network at Interop included OS/2 LAN Manager servers from RCE, 3Com and Ungermann-Bass and a Unix System V.3 server from AT&T. In addition to the four servers, the network contained a DOS workstation client from each of these same four vendors.

Standard DOS applications provided by Microsoft were stored on the servers. This enabled each of the DOS workstations using OSI/NETBIOS to access any of the applications on the four servers. ◘

Friday the 13th goes by with nary a virus

continued from page 23

tions and public censure.

"The fact that viruses are now being taken seriously by law enforcement agencies has somewhat blunted the threat of thrill seekers. So, not surprisingly, the big public attacks have ceased," Weiss explained.

The spate of publicity about viruses has at least raised the consciousness of some users and vendors. IBM, for instance, now markets a Virus Scanning Program, which is used to detect the presence of dormant viruses in personal computers.

In addition, organizations such as the National Institute of Standards and Technology (NIST) are in the process of setting up toll-free, 24-hour hot lines to help users who think their systems might be infected.

Users beware

However, NIST, Weiss and others emphasize that users face far more dangerous threats from viruses than ever before. Individuals — sometimes company personnel — may someday attempt to cripple systems or entire networks for purposes of extortion, embezzlement and espionage.

"Highly motivated criminal minds are likely to use viruses as tools and weapons for espionage or extortion purposes, and those acts work best when they are private and focused," Weiss said.

"Most virus vaccines, antidotes and preventive measures are specific to a particular virus; therefore, it's unlikely the various measures will prove a deterrent to any serious hacker," Weiss said.

"The threat hasn't disappeared," said Harold Highland, editor of Oxford, England-based *Computers and Security* magazine. "It's just gone underground, and that makes it much more dangerous. ◘

Next week: Users talk about how they're safeguarding their systems and networks.

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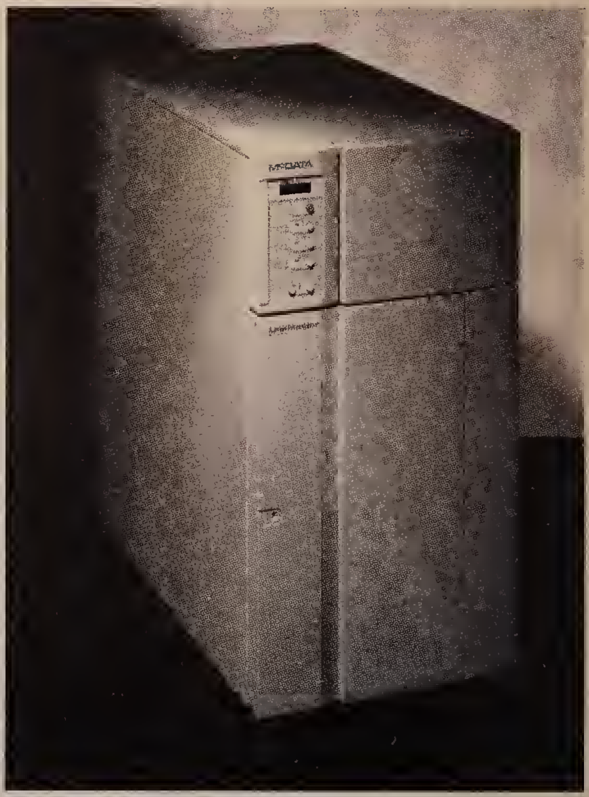
The 6100C network processor utilizes existing channel connections for direct NetView interface.

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These are just a few highlight examples of McDATA's LinkMaster network solutions at work.

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Net display stations offer more for less

continued from page 23

tively limit the server to supporting eight net display stations.

Another approach

Although network display stations are less expensive than networked personal computers, a cheaper approach involves using the personal computer server to support standard ASCII terminals, but this limits functionality.

The configuration with this approach is essentially the same as used with network display stations, except the dumb terminals are cabled directly to a multiport serial interface in the host personal computer.

It should be noted that this wiring requirement makes it difficult to integrate the work group into a formal building wiring system. By comparision, X-terminals can be integrated into existing local networks and, consequently, have outstanding potential for use in future building wiring systems. General-purpose fiber-optic systems can be considered since the same standard fiber-optic connector has been adopted for Ethernet, token-ring and Fiber Distributed Data Interface networks.

Nevertheless, work groups that already have ASCII terminals will find this option attractive. A $700 serial interface will support eight ASCII terminals via RS-232 at speeds up to 19.2K bit/sec. The terminals, however, can support only character-based applications, not bit-mapped graphics.

Other server interfaces, which cost about the same, can support four $2,500 proprietary video graphics adapter terminals over 32M bit/sec fiber-optic links.

If only 3270 applications are required, X-terminals with 640-by-480 resolution are available for $995. But in this range of functionality, dumb terminals attached by serial links would suffice.

Besides the workstation choice, users contemplating using personal computers to support other display devices will have to decide which operating system to implement on the server. The dominant question is whether to go with OS/2 or Unix.

OS/2, though multitasking, is not yet multiuser. So-called multiuser local net servers based on OS/2 are primarily file servers for processes executing on the user's personal computer. This is, of course, not compatible with the X-terminal concept, where the user's display executes no applications at all. The architects of Unix, on the other hand, have been improving its multiuser capabilities for decades.

Adding multiuser capability to OS/2 is an evolutionary process IBM is expected to pursue, but adding the ability to support multiple DOS users, as can be done with Unix, will require major surgery. OS/2 executes real-mode programs, such as DOS applications, one at a time in low memory.

Unix can run multiple user emulations of DOS in protected address spaces so, if one crashes, the others are not affected. OS/2 ties up the whole machine in real mode while executing a single DOS program, so a crash at this time takes the whole machine down.

OS/2 cannot adequately support multiple X-terminals now or in the near future. In the long run, to overcome its inability to support multiple DOS users, it must traverse an evolutionary path likely to result in a difficult-to-manage kludge.

On the other hand, the X-terminal work group cluster focused on Unix-based servers offers a clear economic alternative to networked personal computers. Proper selection of communications and data base software for the servers can provide a truly enterprisewide connectivity solution. ◻

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NetWare servers use SCSI, memory-cache

continued from page 23

keeps the STEPserver/FileMaster's central processor running at its full speed of 33 MHz and zero wait states, Manuel said.

"At Storage Dimensions, we use Novell networks for our own business, and we have one accounting job that used to take about six hours to run" on a server built from a retrofitted personal computer, said Bowles. "On the FileMaster, it now takes about 45 minutes."

The servers can be configured with up to 1.3G bytes of internal disk storage and up to 18.2G bytes of total storage when Storage Dimensions' external LANStor disk subsystems are used.

The systems include Storage Dimensions' Value-Added Disk Drivers for NetWare and have been certified by Novell for compatibility with both NetWare 286 and NetWare 386. Storage Dimensions took over part of Novell's disk drive business a year ago and received the rights to manufacture the Novell-designed NDS2 and NDS4 disk subsystems.

The SCSI controller can handle up to seven standard SCSI devices of any type, including tape drives and optical disk drives. Bowles said Storage Dimensions is working on an erasable optical drive that will be available as an option for the STEP-server/FileMaster early next year.

"A lot of optical drive manufacturers have announced compatibility with NetWare, but we think we will be the first with an optical drive that has been fully certified by Novell," Bowles said. That should help advance the replacement of tape drives with the faster, more reliable erasable optical disk drives for network backup purposes.

A base configuration with 4M bytes of system memory and 150M bytes of internal mass storage is priced at $11,599, and a fully configured model with 16M bytes of memory and 1.3G bytes of internal disk storage is $28,000. These prices do not include NetWare.

The servers will be available through the two companies' usual distribution channels in November. ◻

MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USERS GROUPS AND ASSOCIATIONS

Worth Noting

The average staff turnover at information systems departments in U.S. and Canadian companies is expected to be 11.9% this year, compared with 9.5% in 1988, according to a recent survey of nearly 600 chief information officers by the Chicago-based information technology consulting arm of Touche Ross & Co.

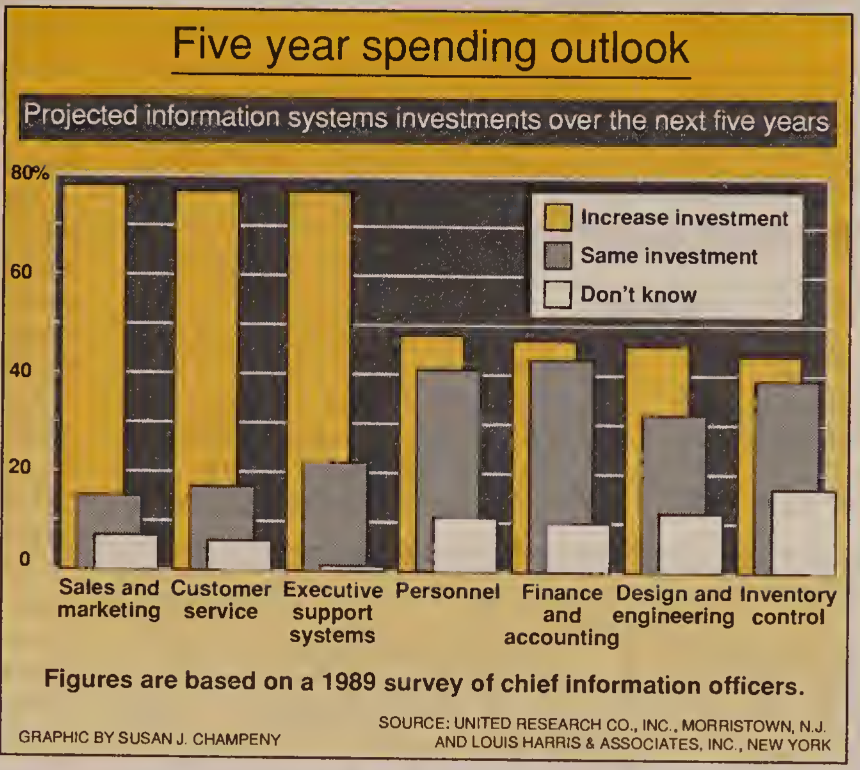
Association Watch

Gary Blunck, a member of the technical services staff of Moline, Ill.-based **Deere & Co.,** said he is soliciting users to send him a list of their requirements for Manufacturing Automation Protocol/Technical and Office Protocol 3.0 products for use on Sun Microsystems, Inc. workstations.

Blunck said he wants to compile a list of user requirements so that he can present them to Sun. "I can't think of any MAP 3.0 products that run on Sun workstations," he said. "We really need more MAP [3.0] support from them."

Requirements may be mailed to: Gary Blunck, technical services staff, Deere Technical Services, John Deere Road, Moline, Ill. 61265, or call (309) 765-5199. Blunck's facsimile number is (309) 765-4128.

The **Independent T-1 User's Association** recently elected a new board of directors. New president and chief executive officer is Raymond Beavan of LTV Steel Company, Inc.; the new vice-president is Robert Heinze of McDonnell Douglas Corp. The new secretary is Richard Bruyere of FMC Corp., the treasurer is Kris Smith of Avery International Corp. and the two directors are Alex Weresow of Sterling Drug, Inc. and Patricia Green of Computer Sciences Corp. ◼



Figures are based on a 1989 survey of chief information officers.

GRAPHIC BY SUSAN J. CHAMPENEY

SOURCE: UNITED RESEARCH CO., INC., MORRISTOWN, N.J. AND LOUIS HARRIS & ASSOCIATES, INC., NEW YORK

Top execs note need for IS strategy shift

CEOs and CIOs tell pollster their technology and business operations aren't properly melded.

By Barton Crockett
Senior Editor

NEW YORK — U.S. companies could waste millions of dollars on ill-conceived information systems efforts in coming years unless they find ways to better integrate technology and business operations.

That's the message of a recently released Louis Harris & Associates, Inc. survey of Fortune 500 executives.

Nearly two-thirds of the 100 chief executive officers and half of the more than 200 chief information officers (CIO) polled by the New York-based research firm said their company's computer and communications resources were not properly integrated with their business plans.

Information systems must be better aligned with business strategy

	CIO	CEO
Need to better share business plan with IS	74%	62%
Improved IS and user communications would make process more effective.	72%	79%

Percentage of respondents agreeing with statements.

SOURCE: UNITED RESEARCH CO., INC., MORRISTOWN, N.J. AND LOUIS HARRIS & ASSOCIATES, INC., NEW YORK
GRAPHIC BY SUSAN J. CHAMPENEY

The researchers said many information systems are nearing obsolescence in the U.S. and that the inability to mesh technology and business strategy imperils the next major wave of information system investments.

"Most corporations are moving to replace or revamp old information systems," said Tom Madison, vice-president of the business information systems group at the Morristown, N.J.-based consulting firm United Research Co., Inc., which teamed with Louis Harris & Associates to design the survey. "Unless companies do a better job [of integrating information systems with business processes], they may never realize the return they expect from these investments."

The survey, titled "Information Systems: New Strategies for Corporate Growth," was conducted last summer.

Several problems

The survey asked CEOs and CIOs to pinpoint the biggest barriers to improving the effectiveness of information systems.

The most often named problem — cited by nearly 70% of the CEOs and 73% of CIOs — was the failure to change operating procedures to take advantage of efficiencies provided by technology.

Other barriers named by a majority of the respondents were the failure by end users to learn how to use information systems, inadequate end-user training and corporate cultures that resist change. In addition, 54% of the CEOs and 61% of the CIOs said that turf battles, in which, for example, end users resist sharing information with each other over a network, reduce the effectiveness of information systems.

(continued on page 30)

Court reporters to benefit from videoconferencing net

Plan would cut travel time, offer new revenue.

By Barton Crockett
Senior Editor

DALLAS — A group of court reporting firms is weighing plans for a private videoconferencing network that would help members cut travel costs and bring in new revenue by offering videoconferencing services.

Led by United American Reporting Service, Inc., based here, approximately 15 court reporting companies last spring formed an as-yet-unnamed industry association to study the feasibility of building a nationwide videoconferencing net. The network would allow lawyers to interview witnesses remotely, saving time and reducing travel expenditures.

Participants may also rent out the videoconferencing facilities as a way to make money.

"Videoconferencing could be a major new revenue source for us," said Jerry Callaway, co-owner of United American Reporting Service. "The market's still in its infancy, and we feel there's a major opportunity to take part in its growth."

Court reporters are independent contractors that accompany lawyers to take sworn statements from witnesses prior to litigation. They also work for courts, recording trial proceedings and managing transcript distribution.

The network under consideration would be a series of videoconferencing rooms around the country interconnected by private network facilities.

To date, two of the companies participating in the group have installed their own videoconferencing facilities.

The firms, United American Reporting Service and Miami-based Jack Besoner & Associates, have installed videoconferencing gear that supports image transmission from 56K bit/sec to 768K bit/sec and uses US Sprint Communications Co.'s Meeting Channel Service.

Subscribers to the Meeting Channel Service get access to about 30 US Sprint videoconferencing rooms in the U.S. and around the world. Some court reporting firms in the group said they are considering building a private net to save money by reducing dependence on the US Sprint service.

Access to a national videoconferencing network would dramatically reduce travel, the executives at the court reporting firms said. Lawyers often spend weeks

(continued on page 30)

EXECUTIVE BRIEFS

BY WAYNE ECKERSON

Futurist foibles. The wonders of science have often caused market forecasters to wax optimistic about future technological developments.

Unfortunately, they often go overboard. According to Steven Schnaars, professor of marketing at Baruch College in New York, one of the biggest futurist faux pas of recent history was made by AT&T.

Schnaars faults AT&T for grandiose predictions of the success of Picturephone services, where people see still life or limited motion images of the opposite party to a telephone call. In the 1960s, AT&T projected that at least three million Picturephones would be in use throughout the U.S. by the late 1980s. While Picturephone technology exists, the cost of using the technology — $1,500 in terminal charges and $100 in monthly service charges — has made the product a scarce item in the 1980s.

According to Schnaars, who has spent years cataloging and following up on forecasts, the main reason so many predictions about future technologies are inaccurate is because forecasters don't understand the market. "Just because a technology exists doesn't mean people are going to want to use it," he said.

Prime examples of where forecasters misunderstood market forces are electronic banking, videotex and interactive television, he said. Projections about these services have fallen short because end users never really wanted to use them.

"Would you want to go home after work and respond to a political survey on your TV?" Schnaars asked.

(continued on page 31)

Top execs note need for IS strategy shift

continued from page 29

According to Madison, these problems illustrate the inability of information system executives to effectively integrate information technologies with operating procedures.

"These problems are management-related, not technical," he said. "Companies face them because they are finding it difficult to align information technology with the way they do business."

Solving this problem is critical because large corporations are about to embark on a major round of new information system investments. More than 50% of the respondents said the average age of their core business applications is eight years, while more than one-third said the average age of their core applications is over 10 years.

"It's pretty clear that most companies will be upgrading their systems in the near future," Madison said. "Finding better ways to integrate these systems with business operations could spell the difference between success and failure."

> Large corporations are about to embark on a major round of new information system investments.
>
> ▲▲▲

One major frustration for users is the difficulty of measuring the return on investment (ROI) from information systems. Ninety percent of the CIOs and 83% of the CEOs said existing information system ROI measures were inadequate.

Only about half of the CEOs and CIOs surveyed said they were satisfied with their company's information system ROI.

One of the best ways of clearing the impediments to using information systems more effectively is to improve communications among end users, nontechnical managers and information system executives, the survey respondents said. Nearly two-thirds of the CEOs and three-quarters of the CIOs said their firms would benefit by increasing the extent to which business plans are shared with information system executives.

Three-fourths of the respondents said better communications between information system executives and end users would help their company integrate information technologies with business goals more effectively (see graphic, page 29).

The survey also highlighted a marked split in the operational areas that executives think have benefited from information technology. Nearly 90% of the CIOs said information systems are effectively supporting non-revenue-producing operations, such as finance and accounting. Sixty-seven percent said that information systems are effectively supporting human resources departments.

But only half of the CIOs surveyed said information systems are really useful in helping their companies in revenue-producing activities, such as increasing consumer contact, improving service, enlarging market share or enhancing marketing.

"There are still significant opportunities for firms to use information technology to improve their external [sales, marketing and service] operations," Madison said.

Accordingly, more than three-quarters of the CIOs said that over the next five years, they plan to increase information system expenditures on sales and marketing and on customer service applications and services. Over the same period, more than three-quarters of CIOs said they plan to increase expenditures on executive support systems (see graphic, page 29). ■

Court reporters to benefit from net

continued from page 29

on the road with court reporters, talking to potential witnesses and taking sworn statements to be used in a court of law.

Executives at the court reporting firms said this travel could be supplanted by videoconferencing nets.

Jack Besoner, owner and founder of Jack Besoner & Associates, said the network could give his company a competitive edge.

"This is a cutthroat business," he said. "Videoconferencing is one thing that could help distinguish us from the competition."

Besoner said his firm also expects to profit by offering videoconferencing services to other users.

In fact, the one time that Besoner's firm leased out its videoconferencing room since installing it last month was for a videoconference between businessmen. No lawyers were involved.

Besoner's company charges $200 to $400 per hour for use of the room, which cost about $60,000 to construct.

Callaway said the opportunity to win new revenue is the main reason his firm is interested in videoconferencing.

"I'll lease my room to the competition, so videoconferencing won't really differentiate me from them," he said. "Instead, videoconferencing could be a major new revenue source for my company, one that could be shared by court reporters across the country if they join us in this network." ■

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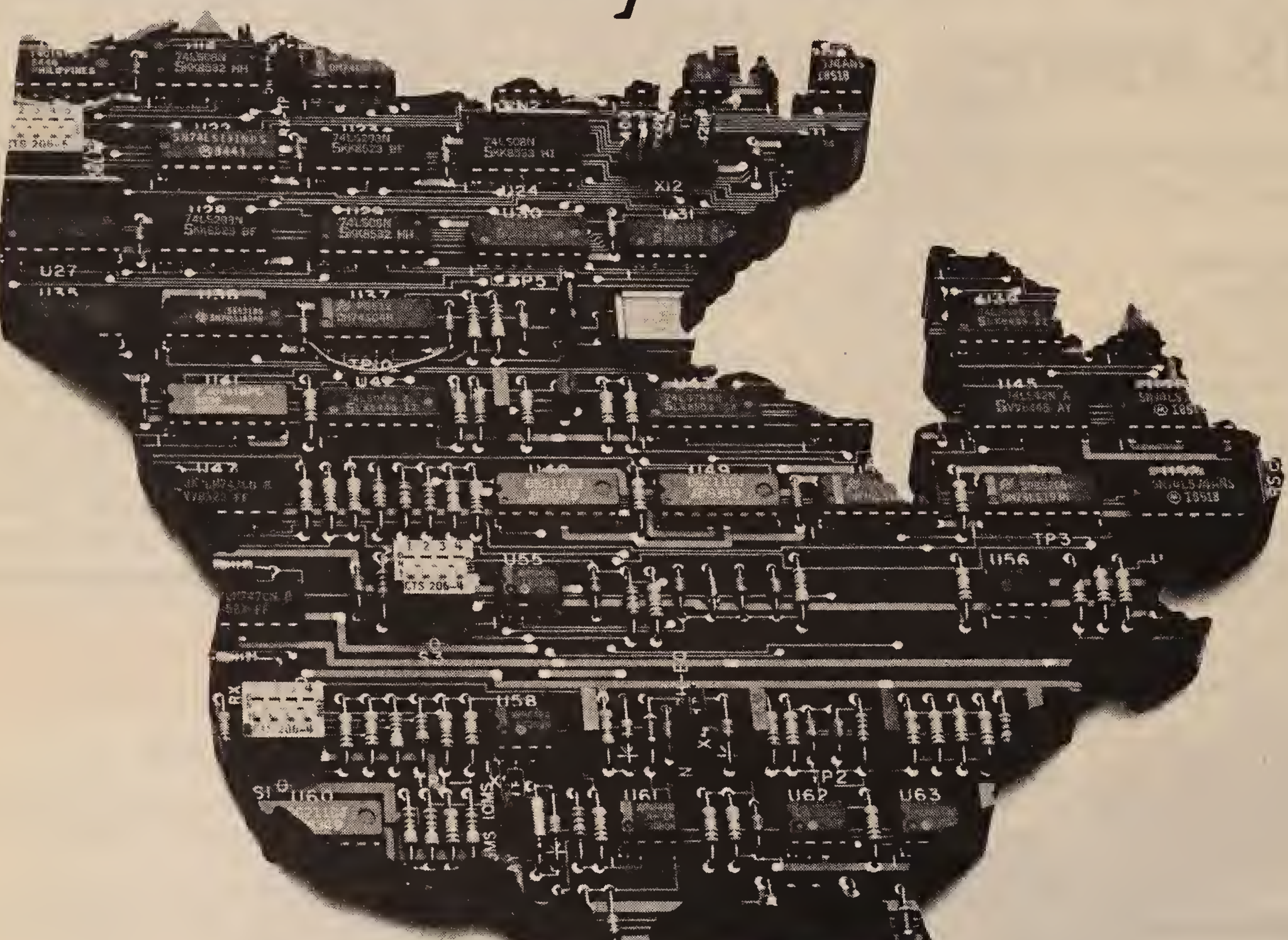

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Survey finds CIO job to be perilous work

By Barton Crockett
Senior Editor

CHICAGO — Chief information officers (CIO) hold "the most perilous position in the executive suite."

So says Thaine Lyman, director of Touche Ross & Co.'s information technology consulting unit, based here, which conducted a survey of nearly 600 U.S. and Canadian CIOs this year.

The survey shows that nearly one-third of all CIOs moved into the post after their predecessor was demoted or fired. According to a written analysis of the survey prepared by Touche Ross, CIOs face a great risk of losing their jobs because senior management holds them directly responsible for the success or failure of their firm's information technology initiatives.

This pressure is likely to increase as more CIOs begin reporting directly to their firm's chief executive officers or chief operating officers. The number of CIOs who report to these officials increased to 39% of the respondents, compared to 35% in a similar survey two years ago.

The survey, which was only recently made available, is titled "Human Resource and Productivity Challenges in Information Services." Nearly two-thirds of the respondents came from firms with annual revenues exceeding $500 million.

The survey asked CIOs to rank what their major challenges will be over the next five years. Topping the list is staff development, followed closely by meeting the changing needs of users. Attracting qualified staff moved up from No. 5 on the list in a similar survey last year to No. 3 this year.

The CIOs were also asked to estimate their 1990 budget levels, with the average respondent predicting an 8% increase over this year. Personnel costs are expected to total about 52% of these budgets, while voice and data communications are expected to chew up about 17%.

Thirty-four percent of the respondents said their company had been through at least one merger or acquisition in the past year. Nine percent said their information systems group had been decentralized. ■

A rocky succession

Reasons why CIOs' predecessors departed

Reasons	Percentage of CIOs
Dismissed or demoted	29.5%
Voluntary leave	21.1%
Promoted	12.4%
Lateral move	10.8%
Retired	9.3%
Other	16.9%

Figures are based on a survey of 568 chief information officers.

SOURCE: TOUCHE ROSS & CO., CHICAGO
GRAPHIC BY SUSAN J. CHAMPENY

Executive Briefs

continued from page 29

Evidently, the computer industry has fared better than other industries in the forecasting department, Schnaars said. For example, early forecasters quite correctly said there would be computers that fit into your pocket by the 1980s.

Of course, the computer futurists faced easy competition. It's not too difficult to compete with forecasts that lawn-cutting robots and automatic bed-making machines would become commonplace items in U.S. households, Schnaars said.

An ode to work. How well do network managers like their jobs?

If a recent survey by Menlo Park, Calif.-based Adia Services, Inc. is any indication, some of them like their jobs quite a lot.

One-quarter of the more than 1,200 Fortune 1,000 managers polled by the placement firm said they would keep their present jobs even if they had enough money to pursue any endeavor they wanted. Another quarter said they would pursue leisure activities. Other responses included returning to school for an advanced degree, spending more time with family or doing volunteer work.

Mind your Qs and As. Many network managers spend a great deal of time and effort preparing for a public speech, but few give thought to the part of their presentation that really puts them on the spot: the postspeech question-and-answer session.

Without a good technique for eliciting and responding to audience questions, speakers can undermine the credibility of a good presentation. One good way to avoid this is to paraphrase audience questions, according to Roger Flax, president of Motivational Systems, Inc., a West Orange, N.J.-based communications training and consulting company.

According to Flax, paraphrasing provides a host of benefits:

- It gives the speaker time to consider the best way to answer a question. Thinking before speaking usually results in more concise, effective responses.
- Paraphrasing provides the questioner with an opportunity to correct the speaker's misinterpretation of the question.
- The practice ensures that the entire group hears and understands the question.
- Paraphrasing provides positive reinforcement to the questioner and encourages others to ask questions. If possible, speakers should say, "That's a good question," and then paraphrase the question. ■

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        Print Queues                         Print Queue Information
   PRINTQ_                                                        Entries
            Current Queue Status                                  tus
                                                                  d Servers
            Number of entries in queue:                    0
            Number of servers attached:                    1

            Operator Flags
               Users can place entries in queue:          Yes
               Servers can service entries in queue:      Yes
               New servers can attach to queue:           Yes
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PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

Worth Noting

See inside for:

- Network Resources' Mac2000 NuBus intelligent Ethernet interface card
- Three new models for Penril DataComm's Alliance V.32 modem line

First Look

Unisys unveils OSI software for DCP line

Unisys Corp. recently announced new communications software for its line of Distributed Communications Processors (DCP) that supports Open Systems Interconnection applications between mainframes.

Unisys' **OSI Transport Services** software runs on DCPs, which act as front-end processors for Unisys hosts. The software offers transport layer services and protocols that let Unisys hosts communicate with other vendors' hosts, sharing electronic mail based on the CCITT X.400 messaging standard and swapping files by using the International Standards Organization (ISO) File Transfer, Access and Mangement.

OSI Transport Services can be used with Unisys' X.25 Packet Switched Communication Software (PSCS) for accessing the DCP over an X.25 public data network. It works with the Unisys DCP LAN Platform software for access via ISO 8802/3 local nets.

OSI Transport Services software is available now under a five-year license for $9,900. The five-year license for DCP LAN Platform costs $4,400, and for X.25 PSCS costs $9,900.

Unisys Corp., P.O. Box 500, Blue Bell, Pa. 19424; (215) 542-4011.

Brixton introduces SNA/IP gateway

Brixton Systems recently announced a Systems Network Architecture/Internet Protocol gateway that links remote

(continued on page 40)

Firm offers EDI pack for Stratus mini

By Tom Smith
New Products Editor

MINNEAPOLIS — EDI Solutions, Inc. last week announced that it developed a version of its EDItran software to run on Stratus Computer, Inc.'s XA2000 continuous processing minicomputers.

At the Retail Information Systems Conference in New Orleans, the two companies announced a marketing agreement under which EDI Solutions, based here, will market its electronic data interchange software to existing and potential Stratus customers in fields such as retail, distribution and manufacturing.

Previous versions of EDItran ran on IBM mainframes running MVS and VSE, Digital Equipment Corp. processors running VMS, and Hewlett-Packard Co. computers running HPE.

EDItran on Stratus processors will be useful for intensive EDI requirements in which uptime and availability are important, according to Jeffrey Kessler, manager of national accounts for EDI Solutions. EDItran operates on Stratus' high-end XA2000 Models 110 to 160, which can run applications such as credit authorization, point-of-sale and inventory control. Stratus' entry-level XA2000 Model 30 could be used as a dedicated EDI gateway.

The software translates data from a variety of communications protocols into the EDI transaction set required by the user. It also lets users receive EDI messages and translate them to their format of choice.

In addition to the ANSI X.12 standard, EDItran supports vertical industry EDI standards such as the Uniform Communications Standard for the grocery industry and the Voluntary Inter-Industry Communications Standard, which is commonly used in the retail field. It also supports EDI for Administration, Commerce and Trade for users with international trading partners.

Customers with trading partners that use different revision levels of a given standard can employ EDItran to support multiple versions of the same standard concurrently. Users receive updated releases of EDItran as new versions are issued.

Data communications protocols supported by Stratus' XA2000 systems include X.25, IBM's Systems Network Architecture, DEC's DECnet and the Transmission Control Protocol/

(continued on page 36)

HP's Apollo unveils FDDI board for Series 10000

By Tom Smith
New Products Editor

CHELMSFORD, Mass. — Hewlett-Packard Co.'s Apollo Division recently introduced a Fiber Distributed Data Interface (FDDI) controller board for its Apollo Series 10000 workstations.

The controller board, X-Net-FDDI, gives users the option of linking local networks to the FDDI backbone by installing the board in a Series 10000 server or linking the workstations directly to the backbone.

As a direct workstation link to an FDDI backbone, the X-Net-FDDI is especially suited for the Series 10000, Apollo's most powerful workstation. The Series 10000 is based on a Reduced Instruction Set Computer architecture and can process 100 million instructions per second.

X-Net-FDDI gives the Series 10000 access to the full 100M bit/sec bandwidth of the backbone, said Paul Rando, senior product manager for networking products. This prevents bottlenecks that might occur with bandwidth-intensive applications involving graphics or large data files.

The FDDI controller also acts as a gateway to link subnets to the FDDI backbone, Rando added. The product supports attachment of IBM Token-Ring, Apollo's token-ring, Ethernet and FDDI networks to an FDDI backbone.

X-Net-FDDI supports Apollo's native Domain Datagram Services protocol for routing data between Apollo Series 10000s. Domain Datagram Services gives users networking capabilities, which include remote file access, terminal emulation and electronic mail.

For communications with other vendors' products, the board also supports Transmission Control Protocol/Internet Protocol.

X-Net-FDDI supports Apollo's implementation of the evolving Station Management (SMT) portion of ANSI's X3T9.5 FDDI standard. Apollo said it will upgrade the software to conform with the standard as progress is made on the SMT layer.

SMT allows FDDI boards to communicate with one another,

(continued on page 41)

CASE/Datatel unveils direct NetView mgmt.

Unit allows IBM management system to control CASE/Datatel modems without using NetView/PC.

By Paul Desmond
Senior Writer

CHERRY HILL, N.J. — CASE/Datatel, Inc. recently announced a control unit that enables IBM's host-based NetView net management system to directly control CASE/Datatel modems, obviating the need for NetView/PC.

The NVI4160 modem control unit uses the same protocol as IBM's own modems — Link Problem Determination Aids (LPDA)-2 — to pass alarms to and receive commands directly from NetView. Customers with NetView consoles can test, reconfigure and collect alarms from remote modems.

The product is easier to use than NetView/PC because it requires no special programming, according to Art Alberding, director of modem marketing for CASE/Datatel.

The modem control unit supports the CASE/Datatel DCM4000 Series of diagnostic modems, which includes models that support speeds ranging from 2,400 to 19.2K bit/sec.

The device attaches between a front-end processor and a local modem in a data center. Each NVI4160 controller supports two local modems and up to 32 drops per line, Alberding said.

When communicating with NetView, the modem control unit uses the LPDA-2 protocol, an in-band protocol that is carried over the same frequency band as data. The protocol is translated to a proprietary out-of-band protocol to communicate with the modems.

> The product is easier to use than NetView/PC because it requires no special programming.

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Out-of-band diagnostics

CASE/Datatel, like most modem manufacturers, uses out-of-band protocols for diagnostics that are carried at a slightly lower frequency than data, although along the same physical line. That approach often means users can continue to control and collect alarm data from remote modems, even if line quality is too poor to support data transmission, Alberding said.

It also means encryption devices can be used. Normally, those devices would also encrypt LPDA-2 data and render it useless, he said.

Codex Corp. uses a similar technique in its DualView product, which supports both in-band and out-of-band net management data to communicate with both NetView and Codex's own net management systems. But Codex requires that firmware be installed in each modem to be managed by NetView.

> Analysts said the new unit could help CASE/Datatel sell modems into IBM environments.

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With CASE/Datatel's approach, installing the NVI4160 on the local end provides support for every modem attached to two multidrop lines. Analysts said the new control unit could help CASE/Datatel sell modems into IBM environments.

"It keeps them in the NetView arena," said Jack Freeman, a senior data communications analyst with The Yankee Group, a consulting company in Boston. "As NetView gets more and more competent, if you're not NetView-compatible, you're going to get sqeezed out."

From a NetView console, users can conduct the same tests that NetView supports for IBM modems, Alberding said. Those include device status checks, loopback tests, transmit/receive tests and line analyses. In addition, users can change configuration parameters, such as speed and alarm thresholds, from NetView.

Available now, the NVI4160 costs $2,495 in a stand-alone version and $2,195 for the rack-mountable version. The new NVI4162 Card Cage, which supports up to eight control units, is also available and priced at $2,990.

For more information, contact CASE/Datatel at 7200 Riverwood Drive, Columbia, Md. 21046, or call (800) 227-3134. ◘

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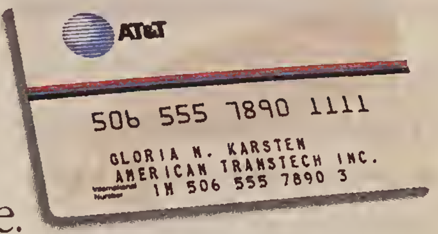

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NBI bolsters Macintosh links in OfficeWorks net utility package

By Tom Smith
New Products Editor

BOULDER, Colo. — NBI, Inc. recently announced enhancements to its OfficeWorks network utilities package to better integrate Apple Computer, Inc. Macintoshes with other microcomputers running the software.

With the release of OfficeWorks Version 2.2, users of Macintosh IIs and Macintosh SEs can employ the Macintosh graphical user interface to send electronic mail, establish 3270 emulation sessions with IBM mainframes and perform procedural processing, which helps users automate frequently performed tasks by creating standardized forms or templates.

Previously, OfficeWorks required Macintosh users to emulate Telnet terminals to use any of OfficeWorks' features in tandem with other microcomputers running the software. OfficeWorks provides E-mail, terminal emulation and file access services to users on an Ethernet network.

> OfficeWorks Version 2.2 lets users invoke Macintosh icons to execute an application running on a Unix server.
>
> ▲▲▲

OfficeWorks also runs on IBM Personal Computers, as well as Unix-based workstations that support Sun Microsystems, Inc.'s Network File System.

Non-Macintosh microcomputers must use Microsoft Corp.'s Microsoft Windows graphical user interface.

OfficeWorks Version 2.2 now supports the AppleTalk protocol. The software allows Macintosh users to take advantage of the microcomputer's pull-down menus and icons to access OfficeWorks features.

OfficeWorks Version 2.2 lets users invoke Macintosh icons to execute an application running on a Unix server. For example, users can deploy NBI's Time Management software package, as well as Informix Corp. and Unify Corp. data bases, with their familiar Macintosh interface.

For users on AppleTalk local nets that are connected to an Ethernet, the product provides connectivity over the Ethernet with larger systems, such as Digital Equipment Corp. and Hewlett-Packard Co. minicomputers.

Cross-file access

Version 2.2 still offers users the ability to access files on the network, regardless of the application software package used to create them, according to Jill Hoekstra, manager of marketing communications for NBI. For example, a document created using WordPerfect Corp.'s WordPerfect can be accessed by a user of Microsoft's Microsoft Word.

This capability, which NBI calls the global file system, uses electronic index cards that provide information such as the user who created the file, the name of the file and the date it was created, Hoekstra said. Users can also access files by attribute searches, in which they use any characteristic of a file included in an electronic index card to retrieve that file.

OfficeWorks uses a conversion service to translate files from WordPerfect to Microsoft Word, for example. Users can create an on-screen icon that will allow them to invoke a macroinstruction command that automatically translates files that are frequently converted between different application software packages.

The product is expected to ship in March 1990. A 32-user package with software for each node and the server will cost $18,800.

NBI can be reached at 3450 Mitchell Lane, P.O. Box 9001, Boulder, Colo. 80301, or by calling (303) 444-5710. ◪

Firm offers EDI pack for Stratus mini

continued from page 33

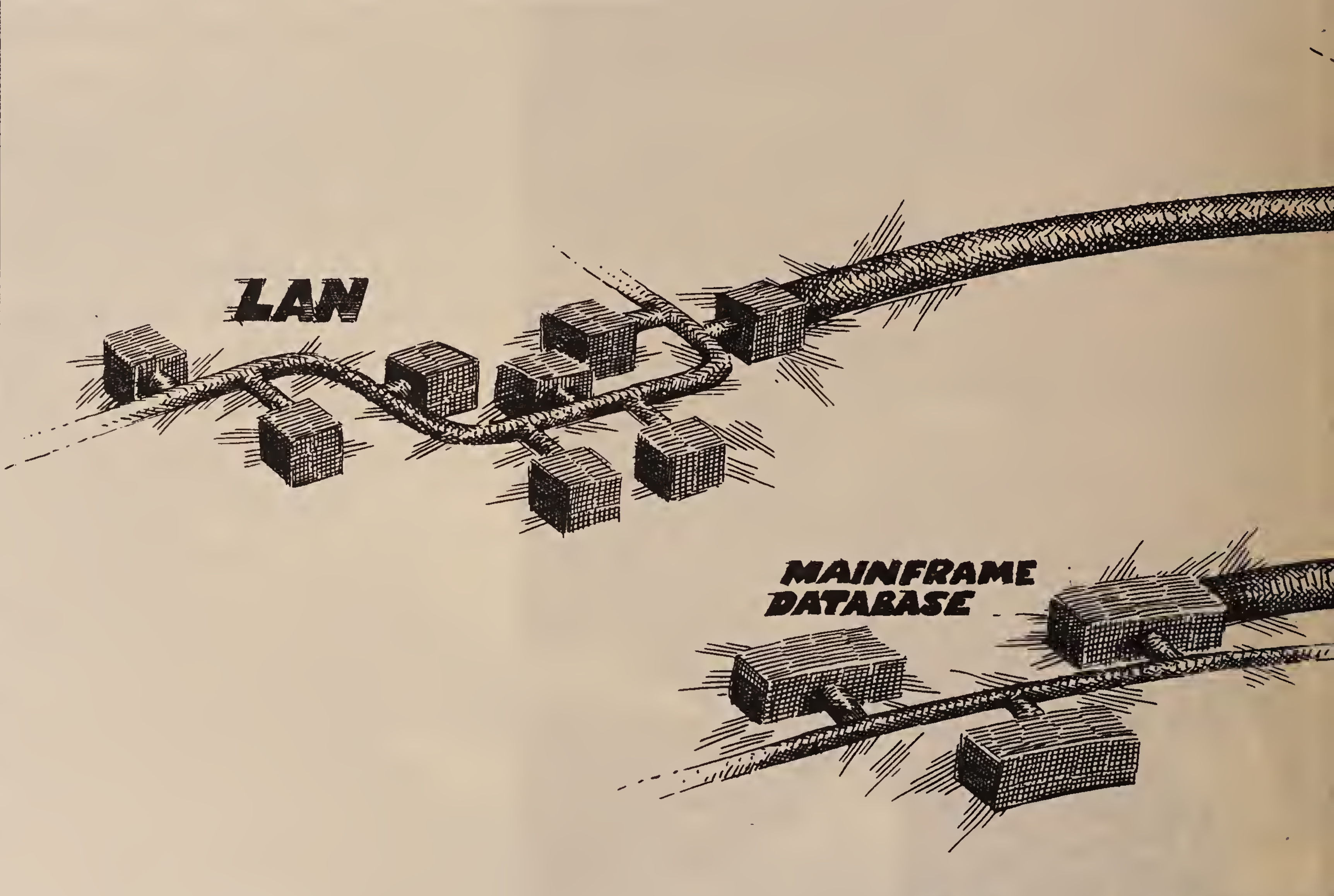
Internet Protocol. The minicomputers can be linked to Ethernet and token-ring nets.

EDItran will enable users to develop "EDI profiles" about their trading partners on the XA2000. The profiles include information about versions of standards in use, account numbers, file routing information and valid transaction types, Kessler said.

EDI Solutions offers two options for interfacing EDItran's translation capabilities to application programs running on the XA2000, Kessler explained. Companies may perform the integration themselves using mapping tools that give users shell programs from which to develop their applications, or they can have EDI Solutions create the applications needed using those same mapping tools. The tools are written in COBOL for both logical and physical mapping, Kessler said.

EDI Solutions will begin selling and supporting EDItran software for XA2000s next month. Prices vary according to the XA2000 model used. The low-end Model 30 version starts at $18,000; the firm declined to give prices for high-end products.

EDI Solutions can be reached in writing at 7760 France Ave. S., Suite 1140, Minneapolis, Minn. 55435, or call (612) 831-9000. ◪



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To everything in between.

In short, you get a solution. You solve the pressing LAN-WAN issues today. Logically. And you get the foundation for long-run integration of network resources.

Transend unveils E-mail software that supports modem connections

By Tom Smith
New Products Editor

PORTOLA VALLEY, Calif. — Transend Corp. recently introduced an electronic mail software product that also supports modem communications with remote computers and information services.

PC COMplete Version 4.1 runs on IBM Personal Computers and compatibles, and it lets users send and receive E-mail in local networks and store-and-forward environments that have modems for communications with wide-area E-mail systems.

A local network node, for example, can access a remote data base by dialing out through a modem. Once information is downloaded from the data base, it can be transferred to a local recipient or sent off-net through remote E-mail services such as MCI Communications Corp.'s MCI Mail and CompuServe, Inc.'s CompuServe.

Modem connection

The connection with off-net recipients can be established through the user's personal modem, a local net modem pool or through a local net gateway.

PC COMplete 4.1 supports the Message Handling Service (MHS) developed by Novell, Inc. and Action Technologies, Inc. for local net gateway and bridging capabilities. MHS and MHS-compatible gateways provide access to other local nets, remote single-user personal computers and a variety of other messaging environments, such as IBM's Professional Office System and Digital Equipment Corp.'s All-In-1.

The software has drivers to support Hayes Microcomputer Products, Inc. modems and offers users the option of creating drivers for other modems. It supports transmission speeds up to 19.2K bit/sec.

The software offers terminate-and-stay resident functionality for local network E-mail so users can exchange mail and perform other tasks without exiting their current applications.

A screen prompt and audible tone notify them that mail is waiting.

The modem communications portion of the software supports Pulsar Systems, Inc.'s Xmodem and Bull Worldwide Information Systems, Inc.'s Kermit File Transfer protocols and also provides Digital Equipment Corp. VT-100 terminal emulation. The user interface is based on a desktop metaphor with in and out baskets, a wastebasket and user-defined folders for filing mail.

E-mail, including attached files, is addressed by checking off names in a pop-up address book, which supports distribution lists.

PC COMplete 4.1 will be available Nov. 1; the single-user price is $229.

Transend can be reached at 884 Portola Road, Portola Valley, Calif. 94028, or call (415) 851-3402. ◼

New DEC device links TCP/IP across DECnet

By Susan Breidenbach
West Coast Bureau Chief

MAYNARD, Mass. — Digital Equipment Corp. recently released the Internet Portal, a device that customers can use to link Transmission Control Protocol/Internet Protocol-based local networks across a DECnet backbone network.

Each TCP/IP subnet is linked to the DECnet backbone with a separate Internet Portal. The portal on the sending segment takes the Internet Protocol datagram and encapsulates it in a DECnet packet for transmission across the network. The portal on the receiving segment strips off the DECnet envelope and sends the original IP datagram to its destination.

The Internet Portal is based on a diskless DECsystem 3100 equipped with 8M bytes of memory, an Ethernet interface with either a thin or thick Ethernet connector, and a serial port.

The hardware platform and the portal software are packaged together and priced at $9,500.

The portal can also be integrated with DEC's existing DECrouter 2000 in a package DEC calls the DECnet/Internet Router 2000.

The DECnet/Internet Router 2000 package costs $15,000 — $7,000 less than the combined price of the portal and router when purchased separately.

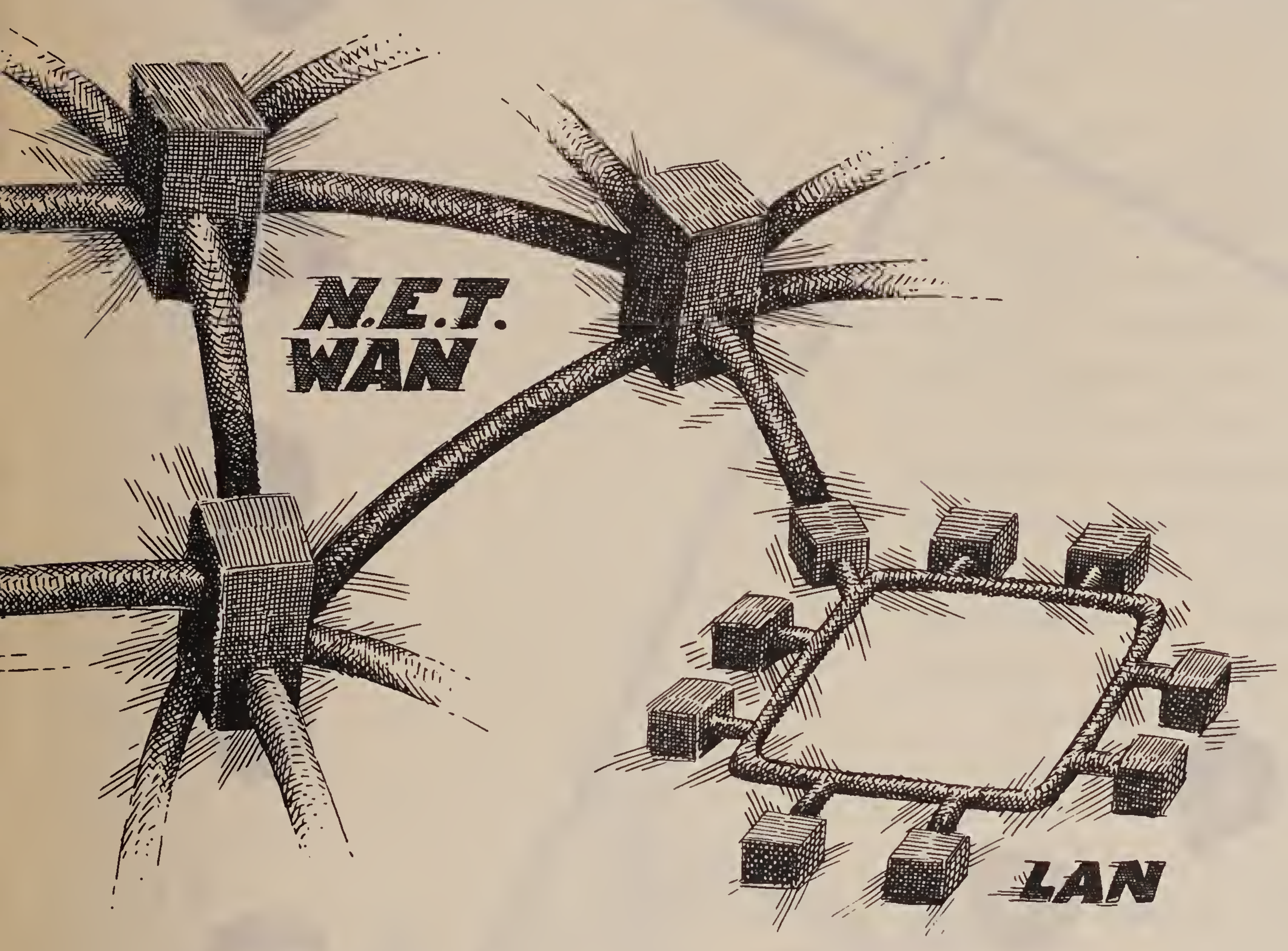
The TCP/IP portal joins DEC's X.25 portal, which links separate X.25 packet-switched networks via a DECnet backbone. In DEC's terminology, a "portal" is a link that provides for communications between a sending and receiving subnet of the same network type.

Not a gateway

It is different from a gateway, which takes data from one network type and translates it into a format that can be received and read by a different network type.

Together, the backbone, SNA gateways, and TCP/IP and X.25 portals are being billed as the initial pieces of DEC's strategy for migrating its customers from today's multiple-protocol environments to OSI networks in the future.

For more information, write to DEC at 146 Main St., Maynard, Mass. 01754, or call (508) 493-7161. ◼



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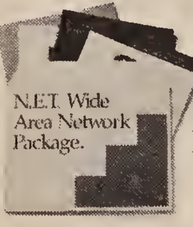

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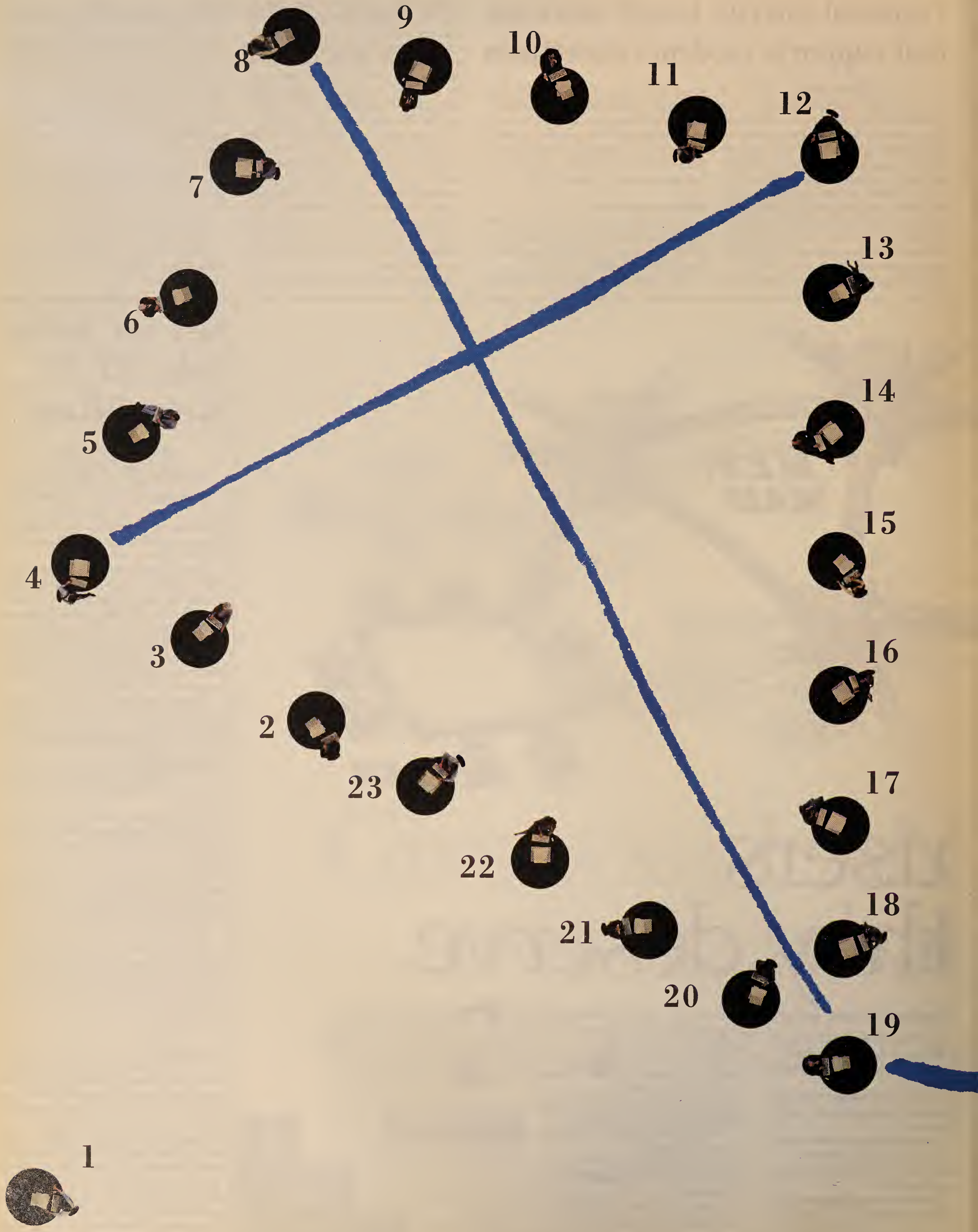
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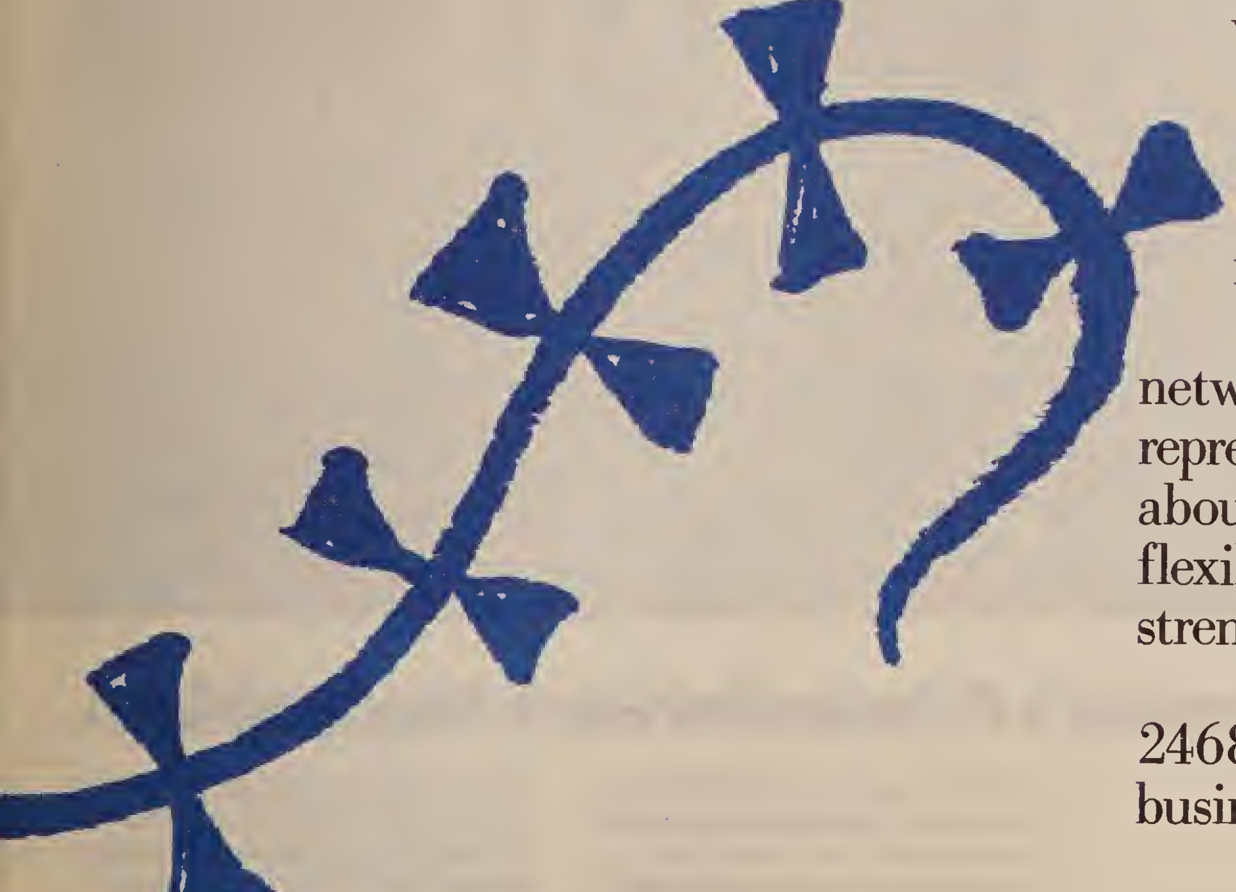


First Look

continued from page 33

Unix processors over an SNA backbone.

The **Brx7300** is a VME board and software that works in a Sun Microsystems, Inc. workstation. The product lets users of Unix-based processors on a local network supporting Transmission Control Protocol/IP share files and data with Unix users on remote TCP/IP nets using an SNA backbone for transport.

With the Brx7300, the Sun workstation emulates an IBM 37XX Communication Controller and can be monitored and controlled by IBM's host-based NetView net management system. Devices attached to the TCP/IP nets and managed by Sun's SunNet Manager can also be monitored by NetView.

A single Brx7300 supports multilink transmission groups that can combine up to 16 lines at 56K bit/sec per line. The product also supports multiple SNA virtual routes to connect Unix systems, which enhances data throughput and allows the Brx7300 to automatically route around trouble spots in an SNA net.

Slated to ship Nov. 1, the Brx7300 costs $17,500.

Brixton Systems, 105 Montgomery St., Cambridge, Mass. 02140; (617) 876-5359.

Network Management unveils new Mind design software

Network Management, Inc.'s Network Analysis Center recently announced a new generation of its Mind wide-area network design software that runs on local networks.

LAN Mind, which is compatible with Novell, Inc.'s NetWare, Banyan Systems, Inc.'s VINES and other popular local network operating systems, enables users to access and share information about wide-area network costs, configurations, plans and operations, the company said. The product complements the company's Mind software products for individual personal computers and Digital Equipment Corp. VAX minicomputers.

LAN Mind can support as many users as accommodated by the local network. The product has two components: a server component that costs $35,000 and a $2,000 workstation component for each simultaneous user supported.

The system allows users to augment or design networks containing up to 16,000 nodes and hundreds of switches. It can analyze mesh and T-1 backbone networks and be used to identify least-cost concentrator, multiplexer and switch locations.

Network Analysis Center, Network Management, Inc., 130 Steamboat Road, Great Neck, N.Y. 11024; (516) 829-5900.

Penril DataComm adds three models to Alliance modem line

Penril DataComm recently added three new models, each supporting a range of standards, to its line of Alliance V.32 modems.

The new products are the **V.32M,** the **V.32/14.4** and the **V.32/14.4M.** The company previously offered only the Alliance V.32, which supported Microcom, Inc.'s Microcom Network Protocol (MNP) Classes 1 to 5 but was not capable of being controlled by a net management subsystem.

All three of the new modems offer support for CCITT V.42 error correction and V.42bis data compression standards. In addition to support for these international standards, the modems will support MNP Class 4 error correction and MNP Class 5 data compression, according to Frank Lonce, marketing product manager for transmission products at Penril DataComm.

All three products support the evolving CCITT V.13 specification for half-duplex simulation support, which will allow communications at 9.6K bit/sec in half-duplex mode, Lonce said. They will offer greater speed than the installed base of half-duplex modems, which generally operate at 2,400 or 4.8K bit/sec.

In addition, Bell 208 modulation support has been added for interoperability with Bell 208 A/B modems, allowing communications with those modems operating at 4.8K bit/sec.

The modulation schemes supported on the existing V.32 modem include V.32, V.22bis, V.22, V.23, V.21, Bell 212A and Bell 103.

The Alliance V.32M is equipped with a separate diagnostic port interface and a noninterruptive auxiliary channel to allow the V.32 modems to be managed by the Alliance Management System. That out-of-band system runs on an IBM Personal Computer AT or compatible running DOS. It provides centralized control with capabilities including configuration, monitoring, and alarm and polling statistics.

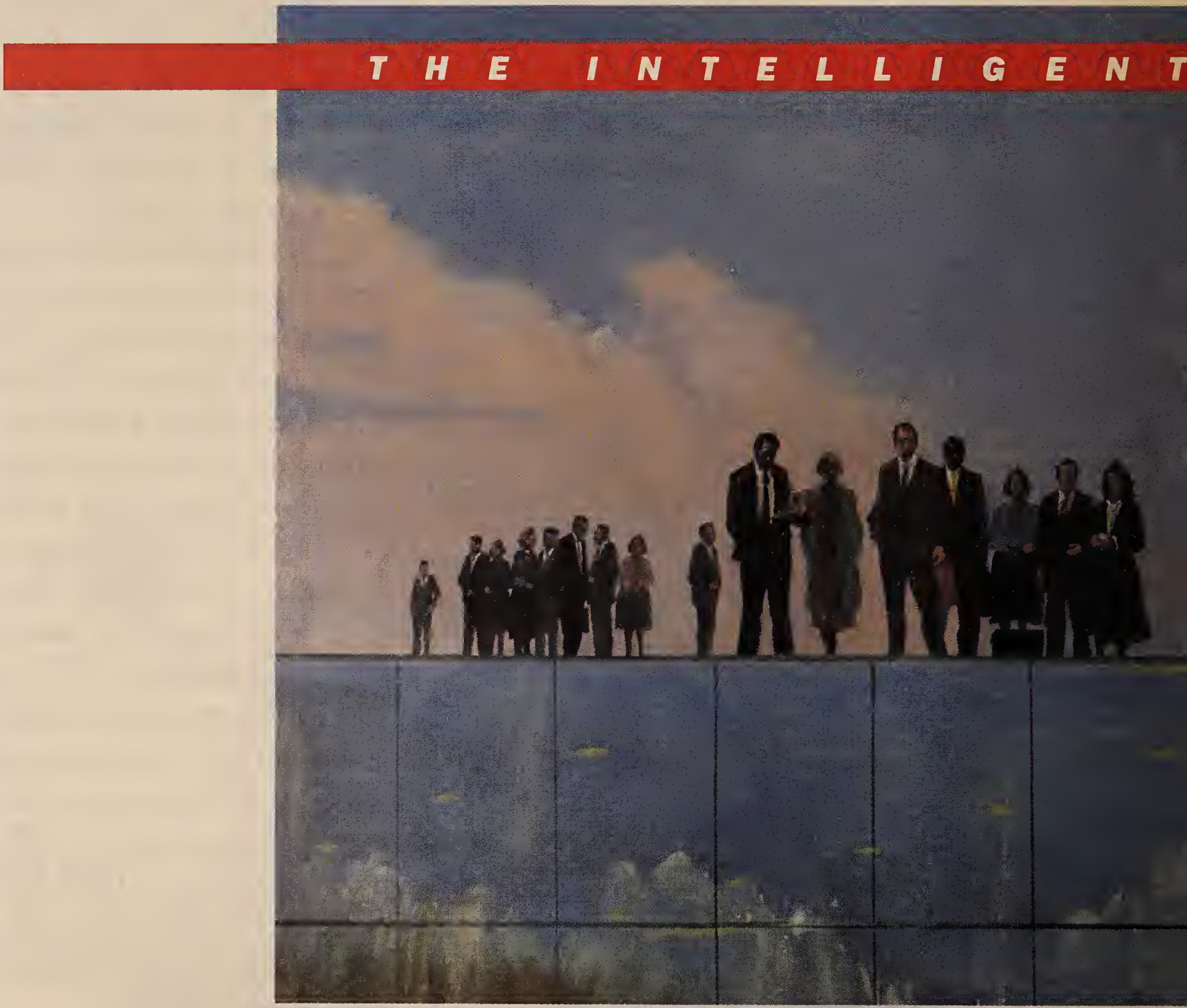
The Alliance V.32/14.4 extends V.32 technology to 14.4K bit/sec over a two-wire dial-up or leased-line circuit. The product is an extension of V.32 and is compliant with the specifications being proposed for V.32bis, Lonce said.

The other 14.4K bit/sec modem, the V.32/14.4M, can be managed by the Alliance Management System.

Penril also announced a rack-mounted enclosure — the 1616 High Density Rack Enclosure — which can be used to intermix any of the company's V.32 products. It costs $1,395 and will be available in November.

All three new models in the Penril V.32 line will also be available in November. The V.32M costs $1,695, the V.32/14.4 is priced at $1,795, and the V.32/14.4M costs $1,995.

Penril DataComm, 207 Perry Pkwy., Gaithersburg, Md. 20877; (301) 921-8600.



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Cellabs adapter sends faxes, data over cellular phones

Cellabs recently introduced an RJ-11 adapter that enables cellular telephone users to transmit facsimile and laptop computer data through cellular telephones.

Datajack works with all major cellular phones, including those manufactured by Panasonic Co., NEC Corp. and Motorola, Inc. It is compatible with any laptop computer that has an internal modem, as well as with all fax machines, the company said.

In addition, it allows customers to send data through older Improved Mobile Telephone System phones as well as 800 MHz dedicated full-duplex radios.

Connection with the data recipient is accomplished by manual dialing. The unit provides the loop current required by fax machines to notify them of a connection, as well as automatic silencing of the mobile telephone/radio handset so it does not interfere with the fax or data transmission.

Datajack costs $195 and is available now.

Cellabs, 6433 Topanga Canyon Blvd., Suite 152, Canoga Park, Calif. 91303; (818) 710-0010.

Dayna announces new pricing, packaging for DaynaTALK

Dayna Communications, Inc. recently announced new pricing and packaging options for its **DaynaTALK** line of network products, which are available for Apple Computer, Inc. Macintoshes and IBM Personal Computers.

DaynaTALK for the Macintosh boosts the data transmission rate of Apple's LocalTalk from 230K to 850K bit/sec. DaynaTALK for the PC supports transmission at 1.7M bit/sec.

Dayna cut the price of its Macintosh DaynaTALK interface by 26%, from $189 to $139, and raised the price of its Personal Computer interface from $289 to $299, an increase of 3%.

"We had to raise the price on DaynaTALK for the PC because we had high production costs and were losing money on it," said David Pascoe, Dayna's marketing manager.

"On the other hand, the production costs on DaynaTALK for the Macintosh are a lot less and our profits were higher, so we could afford to cut the price on the Macintosh box," he added.

In related news, Dayna said it has begun selling its DaynaTALK in five- and 10-user packages.

A five-user package of DaynaTALK for the Macintosh costs $549; a 10-user package is $999. A four-user package of DaynaTALK for the PC costs $1,099.

Additionally, Dayna is selling a five-user package of DaynaTALK for the Macintosh with one Speed Guard Collision Filter for $599 and a 10-user package with two collision filters for $1,049.

The filter, sold separately for $69.95, is a two-port box containing integrated circuits and software drivers used in place of DaynaTALK interfaces to support slow-speed network devices. The Speed Guard Collision Filter prevents slow-speed peripheral devices from interrupting high-speed transmissions and causing data collisions.

Dayna Communications, Inc., 50 S. Main St., Salt Lake City, Utah 84144; (801) 531-0100.

Network Resources unveils intelligent Ethernet card

Network Resources Corp. recently introduced the **Mac2000 NuBus** intelligent Ethernet interface card that off-loads communications processing from its workstation Apple Computer, Inc. Macintosh host.

Unlike dumb Ethernet cards for the Macintosh, the Mac2000 NuBus card can take over as much as 80% of communications processing, including protocol conversion, from the workstation.

The Mac2000 uses the Macintosh Coprocessor Platform (MCP), Apple's standard hardware and software architecture for communications between Macintosh and other environments.

Other MCP-compliant cards, such as Apple's TokenTalk NB, Coax/Twinax and Serial NB cards, could be used in the same Macintosh as the Mac2000 for access to other networks.

The Mac2000 works with the current Macintosh operating system, 6.0, and with A/UX, Apple's version of Unix. It will also work with the upcoming Macintosh System 7.0.

The Mac2000 card is available in three configurations for connecting to Ethernet, fiber-optic cable or broadband coaxial networks.

The card is priced at $995 and is expected to ship later this year.

Network Resources Corp., 2450 Autumnvale Drive, San Jose, Calif. 95131; (408) 263-8100. ☑

Apollo unveils FDDI board for 10000

continued from page 33

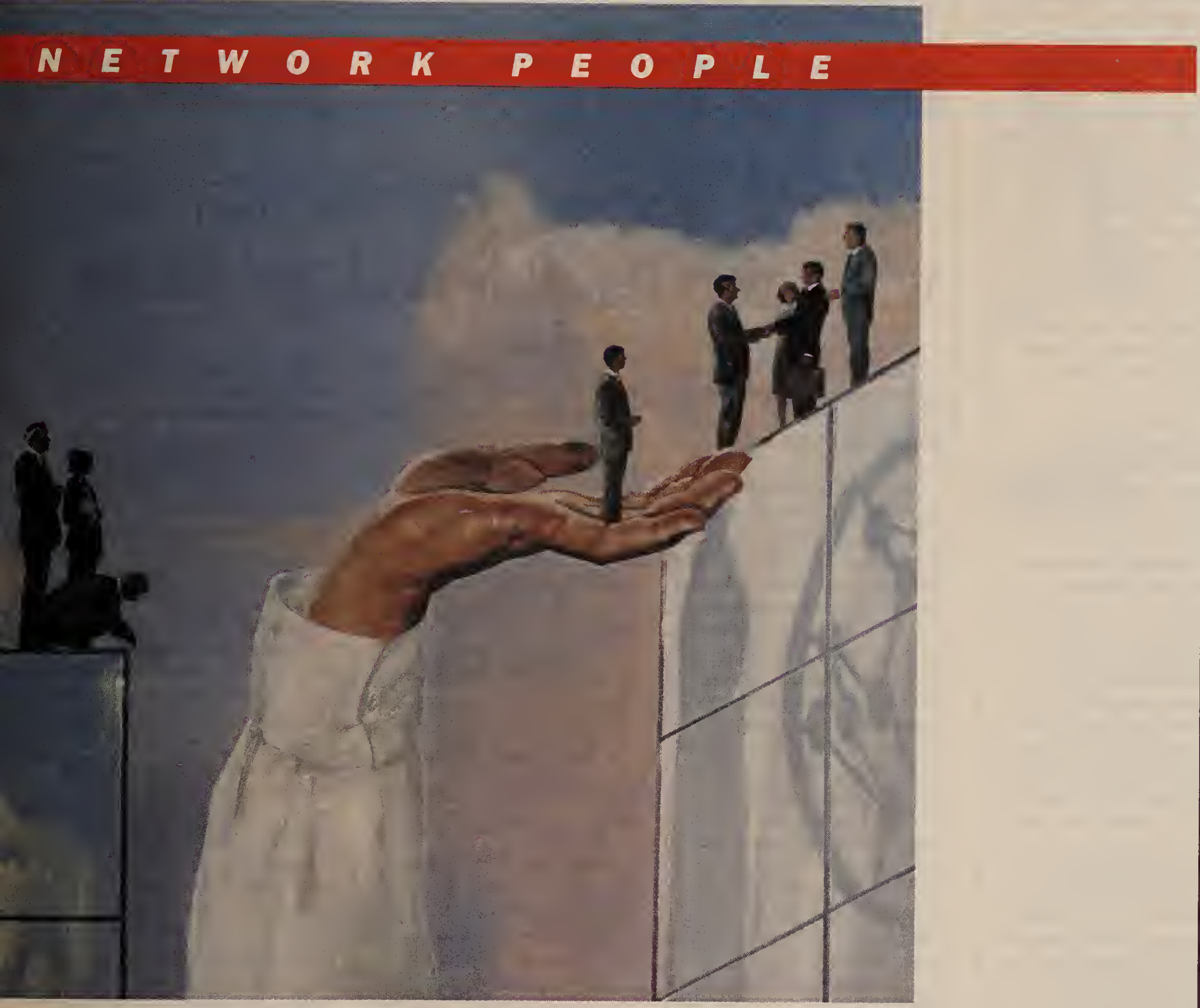
track network events or failures, and provide statistical data on the number of packets sent and received, the number of packets with errors, as well as the size of all of the packets.

Monitoring and management

SMT also performs monitoring and management of the rings in FDDI's counterrotating dual-ring topology.

X-Net-FDDI will be available in April 1990. Pricing information is expected to be set in January.

HP's Apollo Division can be reached in writing at 270 Billerica Road, Chelmsford, Mass. 01824, or by calling (508) 256-6600. ☑



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OPINIONS

STANDARDS DILEMMAS

BY JOHN MCQUILLAN

Weighing standards vs. close vendor relationships

One of the most important strategic issues for network planners is how to maintain the proper balance between the use of standards and reliance on healthy vendor relationships. On the one hand, almost everyone agrees with the obvious benefits of standardization of common interfaces and protocols. On the other hand, virtually no one believes that open systems will shatter close working relationships between users and vendors.

For example, consider local networks. In such a new and rapidly evolving technology, standards represent an especially vexing dilemma: Should users wait for standards and, when they arrive, replace earlier investments with standard products? Or is it wiser just to press on, using the best technology for the job, whether it is standard or not?

As a case in point, consider the prestandard Ethernet vs. the official 802.3. Should users actually throw away their older, noncompliant Ethernets? The answer in most cases is simple: Users don't throw away working systems. (They're notably reluctant to throw away terrible systems, too, but that's another story.) So the user's choice is between two rather different strategies.

> The answer in most cases is simple: Users don't throw away working systems.
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The standards approach places a high value on price, performance and compatibility, but it requires turnover in equipment and vendors to accomplish these goals. The vendor relationship approach places a high value on continuity without the benefit of the major advances in open systems.

Obviously, most users would like to have their cake and eat it too, so they try to work with a small number of approved vendors *and* they try to enforce interface and protocol standards.

Perhaps the stumbling block is that, with few exceptions, the use of standards does not deliver new applications or new business functionality. Instead, a standard network may be easier to manage, easier to expand and more cost-effective in the long run. Many users are convinced that standards-based networks represent a better platform for the future. But that's not enough to sell business-oriented senior executives who are impatient with the technical niceties. They ask, "What can the standards-based network do for me that our present network can't?"

As a general rule, networks grow as users demand new things from them — greater geographical coverage, higher speed, additional applications and new services. It is unusual for a user to reprocure a network simply to get onto a more modern technological platform; it's hard to sell infrastructure.

Today, most executives at user companies value their relationships with their key suppliers more highly than they do the results of the open systems movement. Communications technology is such a rapidly moving target that it's difficult for most executives to be as wholehearted about standards as they'd like to be. They're happy to accept standard protocols and interfaces in the new product releases from strategic vendors. But they are not willing to pay much more for standards than for proprietary solutions. With few exceptions, they are not dropping strategic vendors because of slow progress in the standards arena.

The balance between standards and vendor relationships will remain one of the most difficult and important judgment calls in the business.

McQuillan is president of McQuillan Consulting in Cambridge, Mass. He assists users and vendors in planning future communications systems.

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EDITORIAL

If GM doesn't get its way, it will take its ball and go home

General Motors Corp. has taken the wrong approach in trying to spur action by the North American ISDN Users' (NIU) Forum.

At the NIU Forum's meeting in Phoenix two weeks ago, GM laid out a set of goals it wanted the Integrated Services Digital Network group to achieve during the four-day gathering.

The NIU Forum didn't accomplish all the GM-assigned tasks by week's end, prompting the automaker to say that it would "reevaluate" its role in the group. While GM officials wouldn't be more specific than that, the message seems clear: If the NIU Forum doesn't get moving on some key issues, GM will pull out.

GM's representative said other users and vendors may also withdraw if the group fails to make headway.

The focus of GM's concern is finalization of plans for a proposed multivendor ISDN event, which is intended to demonstrate interoperability among vendors' ISDN products and services.

The demo would be similar to the Enterprise Networking Event '88 in Baltimore, which demonstrated interoperability of multivendor Open Systems Interconnection products.

If successful, the event could spur interest in ISDN and development of ISDN offerings.

An NIU Forum task group has recommended that the ISDN event be held at the SuperComm '91 show scheduled for March 1991 in Houston. The group didn't make any final decision at its Phoenix meeting on when or where the event would be held. In fact, it called for a moratorium on external events, including the interoperability demo, while a newly formed subcommittee weighs proposals regarding future administration of the forum.

> GM's withdrawal, or even its public criticism of the organization, could be devastating.
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Worried that the fate of the event had been placed in limbo, GM proposed that Southwestern Bell Telephone Co. host the demonstration. The NIU Forum didn't respond to the idea, prompting GM's statement that it would reevaluate its role in the group.

That ultimatum hardly seems appropriate.

GM may have some legitimate concerns regarding the NIU Forum's handling of the interoperability event and its progress in other key areas, such as development of so-called implementors agreements for ISDN applications.

But the company would do better to apply its considerable resources to helping the NIU Forum achieve its goals rather than destabilize the fledgling vendor/user coalition by pulling out, or worse, leading an exodus of major users and vendors.

The NIU Forum is a good idea. It gives users and vendors the opportunity to work together defining and building ISDN applications. As envisioned, the group, with users at the helm, really could drive the adoption of this important network technology.

The group, which is not even 2-years-old, is experiencing some growing pains. It may have to modify the way it handles the formulation and development of ISDN applications, and it may ultimately be managed by an organization other than its current sponsor, the National Institute of Standards and Technology, which has said that running the NIU Forum is draining its limited resources.

Given that, GM's withdrawal, or even its public criticism of the organization, could be devastating. The controversy could prevent other users and vendors from taking part in NIU Forum activities, and it could create internal strife that may slow progress on the real work at hand.

GM should do everything it can to help the NIU Forum get over current hurdles and avoid divisiveness. In the long run, that will benefit GM and other users.

OPINIONS

REGULATORY ISSUES

BY ROBERT STEARNS

Forming a communications policy for the future

A few well-intentioned members of Congress are seriously considering transferring the authority to administer the U.S. vs. AT&T consent decree to a congressionally guided Federal Communications Commission.

In most cases, their justification is that a judge — no matter how effective — should not be setting national communications policy. Some also look at the FCC's recent behavior and fear that without firm policy guidelines from Congress, the FCC will continue its own brand of de facto deregulation.

Others see the need to release the regional Bell holding companies from their line-of-business restrictions — in particular, manufacturing — to rekindle American innovation and diminish the ever-widening foreign trade deficit.

These arguments are very weak: U.S. District Court Judge Harold Greene has done an excellent job enforcing the Modified Final Judgment in the face of extraordinarily hostile political interest groups. The FCC has been without competent leadership and adequate funding for years — problems over which Congress could have had a great deal of control. And the idea that turning back the threat from the East by letting the RBHCs manufacture customer premises equipment is only emotional flag waving; it should be so simple.

Instead of responding out of frustration or bowing to pressure from industry, Congress should sit back and ask the important question: What kind of communications systems does this country need as it enters the next century? Imagine: a communications bill based on a vision of the future as we'd like it — indeed, as we need it.

Most of us readily accept the idea that information is the currency of the future. Major corporations have built large information networks to develop and maintain a strategic, competitive advantage. The personal computer has liberated the office worker from the office, the student from the library and consumers from shopping only in their own neighborhoods.

It would certainly seem wise for Congress to consider our future needs carefully. Who should they ask for an unbiased vision of the future? In reality, there is probably no good, single source. Most good academic and commercial consultants — and a lot of bad ones — are already working for one interest group or another. In 1988, AT&T alone hired 424 outside research and consulting companies at a cost of $135.1 million.

Congress must make the policy decisions and empower the FCC to follow through.

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What about asking the professional lobbyists and regulatory lawyers? Same problem. Again, AT&T employed 98 outside firms last year at a cost of almost $18 million. Add in the RBHCs, all the other common and specialized carriers, the consumer groups and the equipment manufacturers, and it gets awfully difficult to find unbiased advice.

For Congress to develop a responsible communications policy for the future, it must take the time now to listen carefully to many experts and interested parties. Our elected representatives must try to develop a sophisticated understanding of what Americans really need and what they really want.

This will take a lot of effort and time. However, done well, it would contribute profoundly to both this country's future and our place in the world economy.

Like most people in the industry, I have my own concept of the future: I see a nationwide network of broadband fiber-based facilities that carries hundreds of information, entertainment and commercial services. And a huge diversity of equipment connects to this network and its public and private subnets.

Who are the players? I see a number of competitive long-distance common and specialized carriers. In some areas, the local carriers remain a monopoly and are responsible for extending fiber to everyone who wants it. In other areas, primarily urban and high-density, competing carriers vie for customers at the local exchange level, but all subscribers are connected through a network architecture that is truly "open" and not a facade for continued monopolistic abuses.

And both long-distance and local carriers are "conduit" providers only, providing broadband pipes and related services, such as installation, maintenance and accounting. The "content," the hundreds of services that flow through these pipes, represent a vibrant and competitive industry on a worldwide scale.

Many services that used to be broadcast over air are now sent on fiber, including broadcast TV. Broadcast spectrum can now be reallocated to services that absolutely require additional radio frequencies, like cellular communications.

Finally, innovative equipment, like services, is also an open and competitive industry, providing cost-effective solutions to customers of all kinds.

Along the way, a number of questions will have to be answered. What should the schedule be for the installation of residential fiber loops? Who should bear the cost of replacing copper and coaxial cable plant with fiber transmission facilities? If subsidies will be needed, from which services should they be obtained?

Congress must make the hard policy decisions and empower the FCC to follow through. Federal and state jurisdictional issues must be addressed.

(continued on page 54)

Stearns is vice-president of corporate marketing at Codex Corp. in Canton, Mass.

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TELETOONS

BY FRANK AND TROISE

Look.. you're only six. Don't you think you should wish for something else besides a Princess Fax Machine for your room?

LETTERS

More on beer debate

Regarding the now famous "beer debate:" Joseph Rumolo, Robin Layland and Steve Simon of Travelers Insurance Co. and I have reached a consensus. The details are as follows:

- The receipt of XID-3 alone makes the most current levels of VTAM determine the node is Type 2.1.
- Older releases of the Network Control Program (NCP) will accept an XID-3 for a PU 2.0 node.
- To decide if the node is Type 2.1, the current NCP does *not* use the presence of the Control Point (CP) Name vector, the setting of the ACTPU suppression indicator or the presence of any independent logical units. And, one can configure PU 2.1 nodes that use none of these.
- Certain IBM products (Advanced Program-to-Program Communications/Personal Computer) that can support independent logical units *do not* use the CPName vector.
- The IBM field staff is not necessarily fluent in the facts above and cannot always be counted on to supply the correct information.

The original article ("Solving the puzzle of independent LU support," *NW*, July 31) never said these facts were any different, merely that the answers were not readily available in IBM manuals. Mr. Rumolo thinks that they are. IBM users must decide for themselves. In any case, everyone who likes to drink stout is welcome to come to Harry's at Hanover Square on Nov. 16 at 5 p.m., where I will deviate from my normal abstinence, buy inebriants for all and even have one myself.

Joe Mohen
SNA consultant
New York

Recognizing vaporware

I agree with Joe Mohen on the epidemic of vaporware and its associated problems ("Seeking a cure for the vaporware epidemic," *NW*, June 19) but think that the following clarification is in order.

Product announcements usually refer specifically to the willingness of a company to take orders, that is, enter a contractual commitment to deliver against stated specifications. Indeed, if an order

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All for one

By JERRY MULVENNA

On June 6 to 8, 1989, representatives of OSINET, an organization of users and suppliers of Open Systems Interconnection products, met in Sydney, Australia, with representatives of four other regional networking organizations to form a cooperative association called OSIone.

OSIone plans to demonstrate to the international business community the worldwide interoperability available in products built in accordance with international OSI standards. OSIone will include representatives from Europe (EurOSInet), Japan (INTAPnet), Singapore (OSNET) and Australia (OSIcom).

Successful OSI demonstrations have been held recently. For example, more than 50 vendors exhibited OSI products at the Enterprise Networking Event held in Baltimore in June 1988. Although that event was well attended, the benefits of the new technology were witnessed by only a small fraction of the potential customer base.

OSIone intends to build a library of demonstration scenarios that will enable public exhibitions to be held in all OSIone regions with a minimum of special preparation.

Major exhibitions are planned for regions represented by each OSIone organization. The forums for these exhibitions will be carefully chosen to maximize the size of the audience receiving the message.

OSIone, a new global cooperative association, will demonstrate OSI interoperability.

The OSIone launch event will be held in March 1990 at CeBIT '90 in Hannover, West Germany. Demonstrations in all OSIone regions will take place within the next 18

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Mulvenna is manager of the network applications group at the National Institute of Standards and Technology and chairman of the OSINET steering committee.

An open system Problem with a Solution

By JOHN HEAFNER

The promise of Open Systems Interconnection is that someday soon users may buy off-the-shelf systems from different manufacturers that can communicate with one another using the same protocol standards. In 1978, when work on OSI began, it appeared to some users and vendors a simple matter to write the base standards and implement the products.

But others — such as the vendors that marketed complex and robust networks, and the National Institute of Standards and Technology (NIST), which, in 1979, initiated its programs in formal description techniques and testing methodology for protocols — thought that some additional steps were necessary before OSI products could become more of a commodity. Computer manufacturers and others have demonstrated considerable cooperation in working together to provide those steps and make OSI available.

OSINET's testing and registration of announced products should solve problems users face in determining interoperability.

Those additional steps have now been recognized and are partially implemented. Regional workshops were necessary to select from the myriad of base standards and

(continued on page 52)

Heafner is senior programmer in the OSI project office of the Communications Systems Division of IBM in Research Triangle Park, N.C.

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There's no such thing as let well enough alone.

h

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ionths. The initial focus of these demontrations will be the needs of international sers of message handling systems (MHS), ut the demonstrations will eventually over the full spectrum of OSI applicaons.

OSIone will draw upon the strengths of ne member organizations to carry out its genda and will use the technical expertise f OSINET to develop tests for verifying nat vendors' OSI-compliant products can nteroperate.

OSINET has already written interoperaility tests for MHS and File Transfer, Acess and Management (FTAM), and will rite the tests for Directory Services, Virual Terminal, Office Document Architecure and Transaction Processing when imlementations of these applications become available. All interoperability test development will be carefully coordinated with the other OSIone members.

The OSIone group also wants OSINET to register the results of successful interoperability testing of different OSI products and make this information available to potential users. The OSINET members want to be able to cite the test results registered by OSINET when marketing OSI products in all corners of the world.

OSINET will be responsible for all interoperability testing in North America and will assist EurOSInet in European testing; OSIcom will be responsible for interoperability testing in the Asian/Oceanic region. INTAPnet and OSIcom will resolve any barriers to interoperability among the regional networks, ranging from different network address formats to differences in the regional functional standards.

The members of EurOSInet and OSNET have strong marketing and promotional skills, so it is only natural that they develop the brochures, videos and other presentation aids that will inform the world about OSIone activities. EurOSInet and OSNET will also be responsible for strategic planning for OSIone, determining how the organization should evolve. Each regional network will be responsible for developing demonstration scenarios for exhibitions held in its region. OSIone will build a library of these demonstration scenarios so that exhibitions can be held in different OSIone regions soon.

The day-to-day business of OSIone will be handled by an OSIone executive committee. Christopher Read of EurOSInet was elected acting chairman of the executive committee at the Sydney meeting. OSIone will consist of at least one executive committee member from each participating regional networking organization. A large part of the international correspondence required among executive committee members will be carried out using the OSI products that OSIone is promoting.

OSIone wants to not only demonstrate the worldwide interoperability currently available in OSI products, but also work with other organizations to remove impediments to interoperability. The international standards produced by the International Standards Organization and the Consultative Committee on International Telephony and Telegraphy must be augmented before vendors can build interoperable OSI products.

Frequently, the standards allow implementors to make choices, such as the class of service to be provided at the transport layer of the OSI model. The standards also omit low-level details such as the maximum length of an electronic mail message. These standards have been refined in workshops located in the U.S., Europe and the Asian/Oceanic regions.

In the U.S., the National Institute of Standards and Technology OSI Implementors Workshop produces stable implementors' agreements each year that vendors use to build products. However, these agreements can sometimes inhibit interoperability with products developed in accordance with agreements reached in other regions. The expert groups in the various regions are working closely to resolve their differences, although regional considerations may prevent total alignment.

Showing the business advantage

OSIone's aim is to act as a force in achieving global convergence of these agreements by showing the business advantages of OSI products that can interoperate worldwide. In demonstrations and promotions, OSIone members will interoperate with implementations based on international agreements wherever possible; however, they will use the appropriate regional agreements when necessary.

Organizations in the OSIone regions are encouraged to participate through their existing regional networking groups. The Corporation for Open Systems recently joined OSINET and is expected to lend its

(continued on page 52)

NETWORK WORLD

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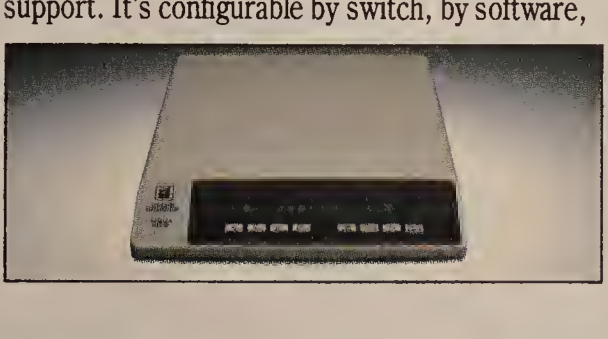

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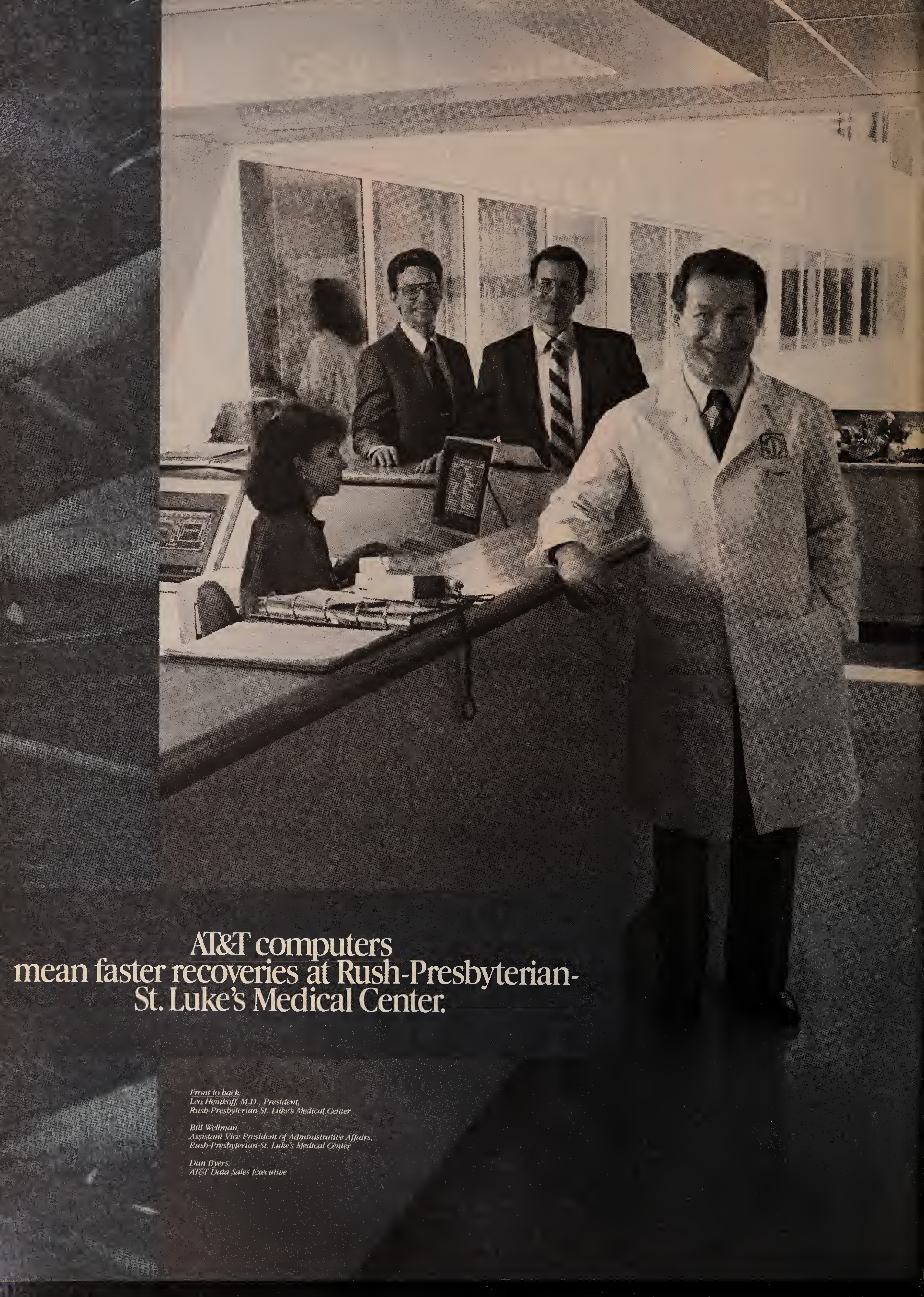
AT&T computers
mean faster recoveries at Rush-Presbyterian-
St. Luke's Medical Center.

Front to back:
Leo Henikoff, M.D., President,
Rush-Presbyterian-St. Luke's Medical Center

Bill Wellman,
Assistant Vice President of Administrative Affairs,
Rush-Presbyterian-St. Luke's Medical Center

Dan Byers,
AT&T Data Sales Executive

Chicago, Illinois
May 4, 1989

Rush didn't want to just survive cost-cutting in the healthcare industry. They wanted to flourish. So to help them compete better, and treat their patients better, AT&T prescribed a distributed networked computing solution. Rush's Leo Henikoff, M.D., Bill Wellman, and AT&T's Dan Byers review the hospital's new Patient Care Information Network.

Rush: You know, it's been a tough time for hospitals. But even though 10 in Chicago have closed, we're doing well. Especially with the new system.

AT&T: Now that your information barriers are gone.

Rush: That's right. Before, no one was really linked up. Our doctors couldn't access clinical data and pharmacology on the same terminal. To make matters worse, some departments were actually duplicating data entry.

AT&T: But now many of your departments are networked. And not just those throughout your campus—but all over the Chicago area.

Rush: It's easier too, since it's one system now. Our AT&T 3B2 Computers make great file servers to our mainframes. And with your 6386 WGS desktops at the nursing stations, data is right at the end of a light pen. In fact, our residents say they're saving hours in run-around time.

AT&T: Don't forget about the AT&T StarLAN and StarGROUP network that link your Compaq and IBM PCs with the AT&T WGS computers.

Rush: Sure. Plus the AT&T ISN is the heart of our network. It links an IBM 3083 for accounting, a VAXcluster for lab tests, a Tandem host for pharmacy records, and AT&T 3B2's. And because we move around so much, the ISN and AT&T SYSTIMAX PDS let us plug displays or PCs into any jack.

AT&T: So, do you think another solution would have had the same value?

Rush: Not really. There are viable alternatives out there. But AT&T is the most cost effective. Other vendors aren't really one-stop-shops either. You helped us integrate a very complex group of systems, trained us, plus you're always there for us. Now *and* when we expand.

AT&T: What about your clinical staff? Have they noticed the change?

Rush: Without a doubt. Our doctors and nurses can now spend much more time with patients since they have faster access to information. Bottom line, we feel good about going with AT&T.

The Rush Computer Solution

THE CHALLENGE:

To help reduce the hospital's operating costs and enhance healthcare quality. To create a distributed networked computing solution that eliminates obstacles within the Medical Center's information system and connect departments on campus and throughout the greater Chicago area.

THE SOLUTION:

An AT&T Integrated Campus Network in which an AT&T Information Systems Network and AT&T SYSTIMAX™ Premises Distribution System support 3,500 doctors, nurses and other health professionals. AT&T StarLAN and StarGROUP™ link PCs from other manufacturers to AT&T. AT&T 3B2 Computers act as file servers to mainframes. AT&T 6386 WorkGroup Systems are high-performance desktop computers within the hospital and are file servers for StarLAN.

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AT&T
Computer Systems

All for one

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considerable testing expertise and facilities to this effort. Earlier this month, the Standards Promotion and Application Group (SPAG) signed a formal collaboration agreement with EurOSInet.

The Commission of the European Communities (CEC) vigorously supports the OSIone program and seeks to expedite it. The CEC wants OSI to be *the* international standard for data communications. The next meeting of the OSIone plenary will be at CEC headquarters in Brussels, Belgium, in November.

The OSIone organizations will continue to pursue their own program of work and retain their own identity while cooperating to achieve a common objective. In recent years, OSINET has concentrated on the research and development activities required to bring OSI products to the marketplace. R&D continues to be an important part of the OSINET work program.

However, OSI products are available now, and a switch in the group's emphasis is warranted. The MHS and FTAM products of today are only the beginning. In the not-too-distant future, more products providing more user services will be announced.

OSINET members believe that turning their sights internationally to be a part of OSIone is a natural progression of activity that is completely compatible with the OSINET mission. The OSIone demonstrations will build user confidence in the new OSI technology and, at the same time, be an effective marketing tool for the vendors. ■

A problem with a solution

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to refine implementation detail further. Later, the conformance testing organizations were formed and have recently announced some initial testing programs.

This brings us to the point where we think we have a common understanding of how to implement any protocol, and soon we will be able to test these implementations for conformity. Yet testing an implementation for conformance to a test system does not assure general interworking of one implementation with another. The next step in assurance of interworking is interoperation testing of the various vendor implementations.

Although this peer-to-peer testing does not guarantee complete interoperability either, it provides additional confidence that these systems will meet users' expectations.

While users widely accept the need for interoperational testing, actually testing communications protocols requires much time and money.

This conflicts with other user expectations for timely product availability and lower costs derived from competitive procurement. Clearly, it is not desirable to negate any projected savings through costs and delays brought about by testing requirements.

How then are vendors to provide OSI products to users in a timely and cost-effective manner and yet satisfy the recognized need for interoperability testing?

OSINET, an organization of users and suppliers, has adopted the following approach to this problem: Perform vendor-to-vendor testing of OSI products just once and record the results of successful tests in a data base that is widely available to users. Such testing is to occur as part of the normal product development cycle, with the added advantage that the test results are made available and may be cited in procurement.

Subsequent customer premises testing should not be necessary because it would, at a high additional cost, simply repeat the testing already carried out and reported. Thus, testing costs may be reduced and schedules shortened.

The service at a glance

The OSINET's program of testing and registering products provides some confidence, in addition to what may be gained through conformance testing, that implementations can interwork.

> Testing protocols requires time and money.
>
> ▲▲▲

Testing parties (typically two vendors) privately, voluntarily and bilaterally agree to perform certain interoperation tests. The results of successful tests are summarized in a short document called the "Supplier's Declaration of Interoperation." This document is registered on-line with the OSINET's network registration service.

The supplier's declaration identifies the vendors, their respective systems and OSI products and summarizes the test results. In addition to the declaration that is made available to users, the vendors create three other documents. These documents, which vendors are expected to provide to their prospective customers, contain supplemental detail. (The actual test cases that are executed may be obtained from OSINET.)

Two of the three documents are completed before testing. They describe the protocol suites being tested in sufficient detail for the vendors to carry out the tests. These documents are modeled after similar standard forms (pro formas) that the International Standards Organization (ISO) has created for conformance testing.

The third document is completed after testing and describes the detailed results of each test case. It is also modeled after an ISO standard for conformance testing.

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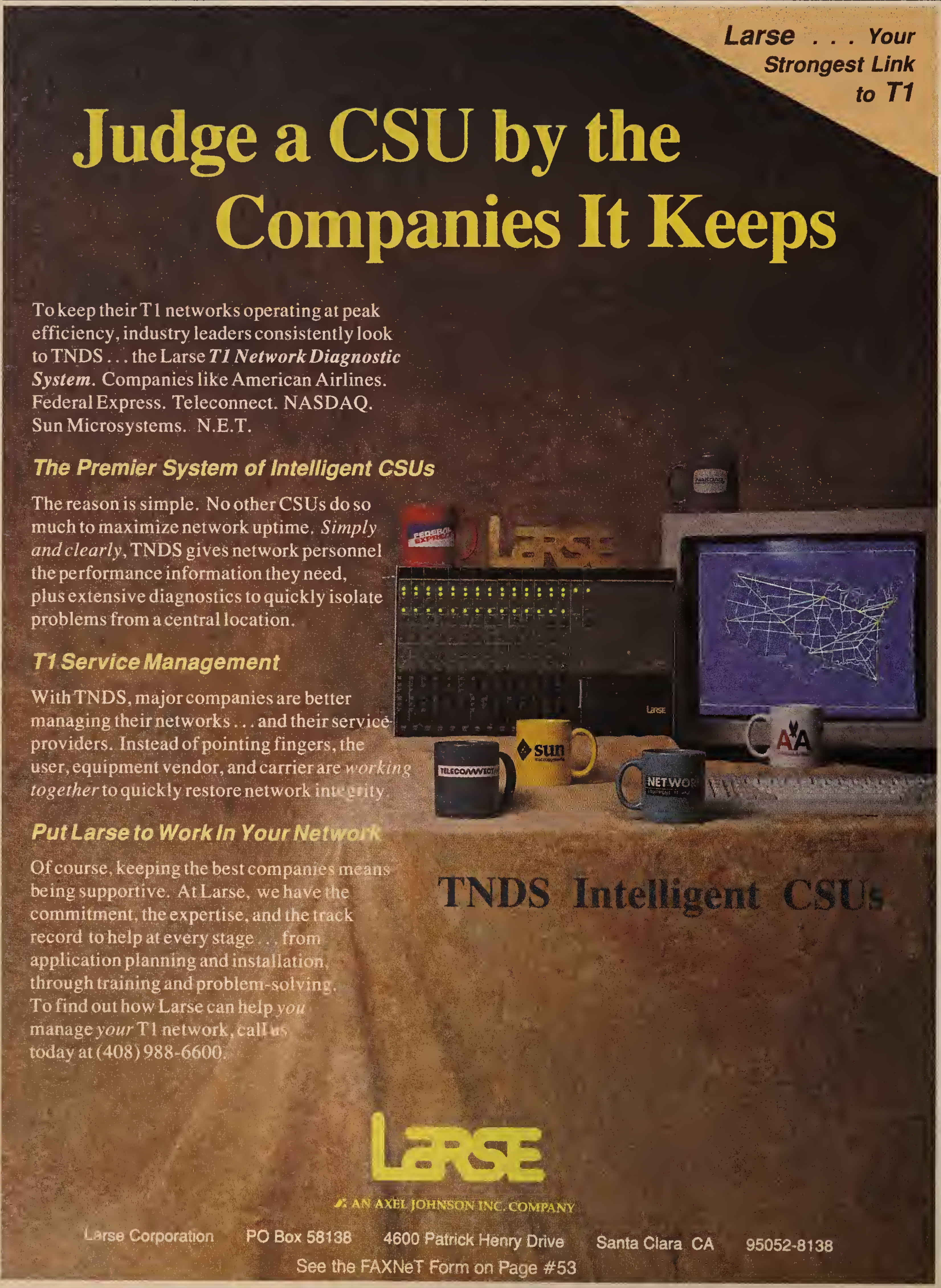

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☐ One Site
☐ 2-9 Sites
☐ 10-20 Sites
☐ 21+ Sites

Product Advertised: ______________________________

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Intended Application: ______________________________

____

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OSINET supplier members select test parties at their own volition and by mutual consent.

There is no assignment or pairing of test parties. Testing between particular pairs of vendors is expected to occur at approximately the same time in their development cycles.

Testing and registration

The two test parties are expected to sign a legally binding agreement concerning the testing and subsequent registration. OSINET provides a model agreement that covers intent to register, nondisclosures and other relevant information. The parties may or may not choose to execute this particular instrument. The two documents that must be completed prior to testing are written and exchanged between the test parties.

The two parties then conduct the test campaign using tests produced by the OSINET's Technical Committee.

For each seven-layer protocol suite, there exists a core set of required tests and an optional set that may be exercised if the optional features of the protocols are implemented by both vendors.

Next, the vendors prepare a detailed test report, which has a vendor-controlled distribution, and write the supplier's declaration summary that will be made available to users. Finally, the vendors register the supplier's declarations on-line with OSINET.

The vendors subsidize the data base maintenance and bear all their own testing costs. They are, of course, responsible for the accuracy of the information they register.

Suppliers' declarations are available on-line to OSINET member companies — users and vendors. NIST is helping to define various means for making these entries available to industrial and governmental agencies for a nominal charge that would cover mailing and handling.

This data will be accessible on-line to users through a dial-up service. Users will be able to tell at a glance, by scanning the one-page declarations, which vendors' systems have been shown to work together for file transfer and messaging. Furthermore, users will be able to identify the optional features of the protocols that were successfully tested.

The main purpose for creating the testing and registration data base is to provide a "Yellow Pages" for prospective buyers of OSI equipment and, equally important, to satisfy their requirements for the demonstration of product interoperability.

Although the data may be used for any lawful purpose, it does not replace the marketing functions of the vendors. For detailed information on value-added features, field support and how a product is supported within a vendor's architecture and across systems, users should contact a marketing representative from the company of interest.

Current members

IBM, Unisys Corp., Digital Equipment Corp., NCR Corp., Xerox Corp., Retix, Touch Communications, Inc., The Wollongong Group, Inc. and Hewlett-Packard Co. are the vendor members of OSINET that are pioneering this service. NIST, using its reference implementation of OSI, is an equally contributing member.

Currently, OSINET has about 20 vendor members, most of which are expected to participate in the service in the future.

For further information on either OSINET membership or access to the testing and registration data base, contact Jerry Mulvenna, OSINET chairman, NIST Building 225, Room B217, Clopper Road, Gaithersburg, Md. 20899. ◼

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For registration information, call:

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INTERNATIONAL
COMMUNICATIONS
ASSOCIATION

LIMITED TO FIRST 250 REGISTRANTS

Forming a policy for the future

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While the states should retain some prerogatives with regard to the costs of residential local exchange telephone service, a modern national communications infrastructure cannot be built upon 50 independent regulatory foundations, each having different rules for the provision of information services, including fiber-borne home video transmission; interconnection among carriers and other service providers; access pricing; and a host of other contentious areas where today's dual jurisdiction pertains.

Similarly, while localism can be retained as a value for determining what is carried over community fiber networks — a value now embodied in the FCC's broadcast licensing scheme — the local franchising and protected monopoly status of cable companies should be scrapped.

Certainly, these suggestions are potentially controversial. They are based on the fundamental premise that the future of our communications industry and our international competitiveness hinges on letting various market participants do what they do best: carriers to transport media, manufacturers to design and develop communications products and content providers to work in their specialized metiers.

This is a healthier approach than focusing on line-of-business restrictions put into place with the breakup of yesterday's nationwide telephone monopoly. Those with an interest in the future of communications in the U.S. must suspend for a moment their adversarial commercial interests and begin to develop a dialogue with Congress about that future. Japan has a carefully orchestrated communications policy, and the European Community is rapidly developing one.

Failure to develop a dialogue with Congress will contribute to making America a second-rate economic power in the next century. If information is currency, we can't permit our communications capability to devalue for a lack of vision and national policy. ◼

Smartening up

The type of cabling chosen — and where it's located — is key to the evolution of the intelligent building.

CONTINUED FROM PAGE 1

gional vice-president of Electronic Systems Associates (ESA), an engineering consulting firm based in New York. "Any system could be connected to any other system, and there would be a system or master processor controlling all the other systems."

A popular idea

During the mid-1980s, several factors helped to popularize the intelligent building concept, including a steady decline in the price of electronic components, rapid expansion in the quantity and quality of telecommunications services, continued use of energy management systems that were installed after the 1970s energy crisis, the divestiture of AT&T, which led to the emergence of a diversified telecommunications service industry, and the development of distributed computing.

Commercial property owners as well as telecommunications and building controls vendors seized the idea of the intelligent building as a way of promoting office space and high-tech products.

"Developers hyped the heck out of it as a means of pushing speculative office buildings," says Jack Caloz, president of ESA. Firms that formerly had specialized in providing either services or hardware products attempted to market intelligent building packages that integrated both.

But the bubble soon burst. "Expectations were way, way beyond reality," says Tony Autorino, chairman and chief executive officer of Shared Technologies, Inc. in Wethersfield, Conn. The vision of completely integrated building systems ran far ahead of what was affordable and technologically feasible. "We're still waiting for the advent of that master processor," Sumski adds. "There is no expert or company that can create such a system."

Evolution of the idea

Tenants of office buildings resisted hardware vendors' attempts to lock them into a line of proprietary hardware products and were dubious about their ability to maintain and support an intelligent building system once it was installed. And providers of telecommunications services that had started selling building controls as part of an intelligent building package found there was very little profit to be made on the hardware after installation.

"Once you've installed your security system, there's no additional revenue other than maintenance," says Paul Barry, director of field operations for Fairchild Communications Services Co. in Chantilly, Va. "Once it's sold, it is time to move on and sell another one."

Firms such as Honeywell, Inc., IBM and Milwaukee-based Johnson Controls, Inc., a leading supplier of building environmental controls, eventually sold their interests in ventures created to market intelligent building solutions. Many viewed AT&T's 1986 sale of Sharetech, an 18-month-old joint venture that it started with Hartford, Conn.-based United Technologies Corp., as the death knell of the original intelligent building concept.

"It was a bellwether event, but I think people misinterpreted what the bells were saying," says Autorino, who purchased some of Sharetech's assets from AT&T and formed Shared Technologies, a telecommunications service provider that specializes in shared tenant services (STS). Autorino argues that building owners and equipment suppliers should never have tried to provide intelligent building services.

"It is a high-technology-based business, and it can grow like crazy, but it is not product-based," he says. "No one in the hardware business could possibly survive in this high-tech service business."

"When building developers decide they are going to be in the STS business and put a switch in the building, operating it with two or three technicians, it is an unmitigated failure," he continues. "They have no buying power and no technological or maintenance talents."

Not the same as STS

At first, many considered STS to be synonymous with the idea of the intelligent building. "Many companies, including ours, did a lot of work trying to integrate building systems into common networks," says David Fisher, senior vice-president of research and development for American Auto-Matrix, Inc., located in Export, Pa. "But this idea was twisted into a different notion that was called the intelligent building, even though it had little to do with the building itself. It was the notion that buildings with multiple tenants could provide shared services for tenants and that

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(continued from page 55)

these services could be integrated with a common communications network.

"It really had nothing to do with integrating voice, data and other building controls," Fisher says. "It was an attempt by the larger companies to get a proprietary hold on all of the service elements in a building so that one company would be the source for all the services. The failing was that this wasn't especially good news for the tenants, who didn't necessarily need or want to share these kinds of services."

Some occupants of multitenant buildings were reluctant to use STS because they were concerned about security and vulnerability to failure when voice and data networks are shared with other tenants. Some firms wanted to specify their own systems. But providing different systems for different tenants proved expensive for building owners, who needed to keep rental rates low in highly competitive real estate markets.

Other factors also worked against the economic viability of STS. Building developers need a larger anchor tenant to make STS affordable, according to Caloz. But it's often less expensive for anchor tenants to buy, rather than lease, their own switch and obtain services from their own communications department. This makes it difficult for building owners to provide STS to their smaller tenants at affordable rates. And developers tend to look for a faster payback from an investment in STS than firms that view their communications infrastructure as part of a longer term investment strategy.

STS, as a business service provided by building owners and equipment manufacturers, is dying, according to Autorino. At the same time, it is being replaced by a growing industry of nationwide telecommunications service providers that specialize in providing a single source for all the services that were offered by AT&T prior to divestiture, as well as some new services. The industry has scuttled the term STS, replacing it with Communications Services Management.

In multitenant buildings, where the majority of tenants occupy one or more floors, "STS is going absolutely wild — we've had more growth than we can handle," Autorino says. "We can bring the tenants some technologies or products they really couldn't afford on their own, such as a battery backup, redundant switching and integrated voice and data."

At this point, integration of voice and data actually means sharing the same wiring for transmitting messages, but the voice and data functions themselves remain separate. "The PBX is just a switch; it's not a host," Autorino says.

Keeping the faith

Meanwhile, design consultants and engineering firms kept the intelligent building idea alive by adopting a low-key approach that involves careful preplanning for coordinated installation of heating, ventilation and air conditioning (HVAC) building controls, as well as telecommunications, data, security, fire and life safety systems.

Typically, these engineering firms design a set of systems, provided by separate vendors, that run parallel to one another in a large building occupied by a single tenant. Using a single contractor to install the systems makes it possible to take advantage of larger discounts when purchasing materials and to have better documentation and coordination of the systems.

"Wherever you see people using sophisticated electronic and electrical equipment in a building, whether it is fire and life safety equipment, intelligent smoke detectors, uninterruptible power supplies or building automation systems, you have to start viewing the building as an intelligent building," says Barry Donaldson, executive vice-president of New York-based Tishman Research Corp., a division of Tishman Construction & Realty, Inc., one of the world's largest construction and real estate development firms.

> "STS is going absolutely wild," Tony Autorino says.
>
> ▲▲▲

"You have to start bringing together and integrating all of the building disciplines in an interdisciplinary approach," he continues. "Probably three-fourths of our office buildings and all of our hotels and hospital work involve the application of intelligent building technology and design attitudes. We just consider many of the principles of intelligent building technology to be very basic principles of good design. It is becoming a common language of design and construction."

"In a nutshell, intelligent building design is just good engineering for all of those systems," Caloz adds.

Good coordination

As office networking expands and the sophistication of building systems increases, coordinating the installation and operating these systems is becoming more important. The systems in an office building may include intelligent zoned lighting, temperature, air circulation, and fire and safety monitoring, as well as fire suppression systems, movable office partitions, data processing networks and multiple communications systems including voice/data networks that use intelligent PBXs and cable television systems.

As office systems have grown in number and complexity, the demands of office workers for easy access and flexibility have also escalated. Although it originally re-

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ferred to an AT&T product, the phrase "premises distribution systems" has now become a generic term for providing communications outlets as frequently as power outlets. "The most intelligent building today has universal cabling to all communications points," Sumski says. "As the intelligent building evolved, it became, more practically, a cabling issue."

Universal cabling allows workers to change location with ease, a process building designers call churning. For many large firms, an annual churn rate of 30% is not uncommon. This means that a third of the employees shift location each year as departments change size and new work groups are organized.

It has become increasingly important to install excess capacity to allow for expansion and changes in technology. "We're seeing the proliferation of LANs and [wide-area nets] and changes in computer hardware technology," Caloz says. "Whenever these changes occur, the connectivity changes.

"In major metropolitan areas, where you are reusing buildings that are wired up point-to-point, you have to pull a new wire every time someone moves," he says. "In some of those buildings, there just isn't any more room to run new cable and nobody knows what's live and what's dead."

Wiring management

"The cabling and communications distribution throughout a building all have to be marked and designated — it's much tighter in the early design than anyone ever dreamed," Donaldson adds. "All this cabling is installed under the floors and through the risers in the building, which means you have to have some kind of wiring management design. When you move things later, wire management becomes very critical.

"It means a very different understanding of the physical configuration of space and of the design of a building," he says. "Architects and mechanical and electrical engineers have to speak with each other very early on."

But "network designers are not always aware of the building conditions that they are designing for," Sumski says. "Typically, the technology people do not get involved until after the programming for the building shell and core is pretty much completed. It's harder to modify the actual building than anything that goes into it, so the thing to remember is that you really have to be careful when you get the golden opportunity to plan a new building.

"Network people should be involved from the very inception of the building," he said. "If intelligent people are involved early on in the building process, the building becomes more intelligent."

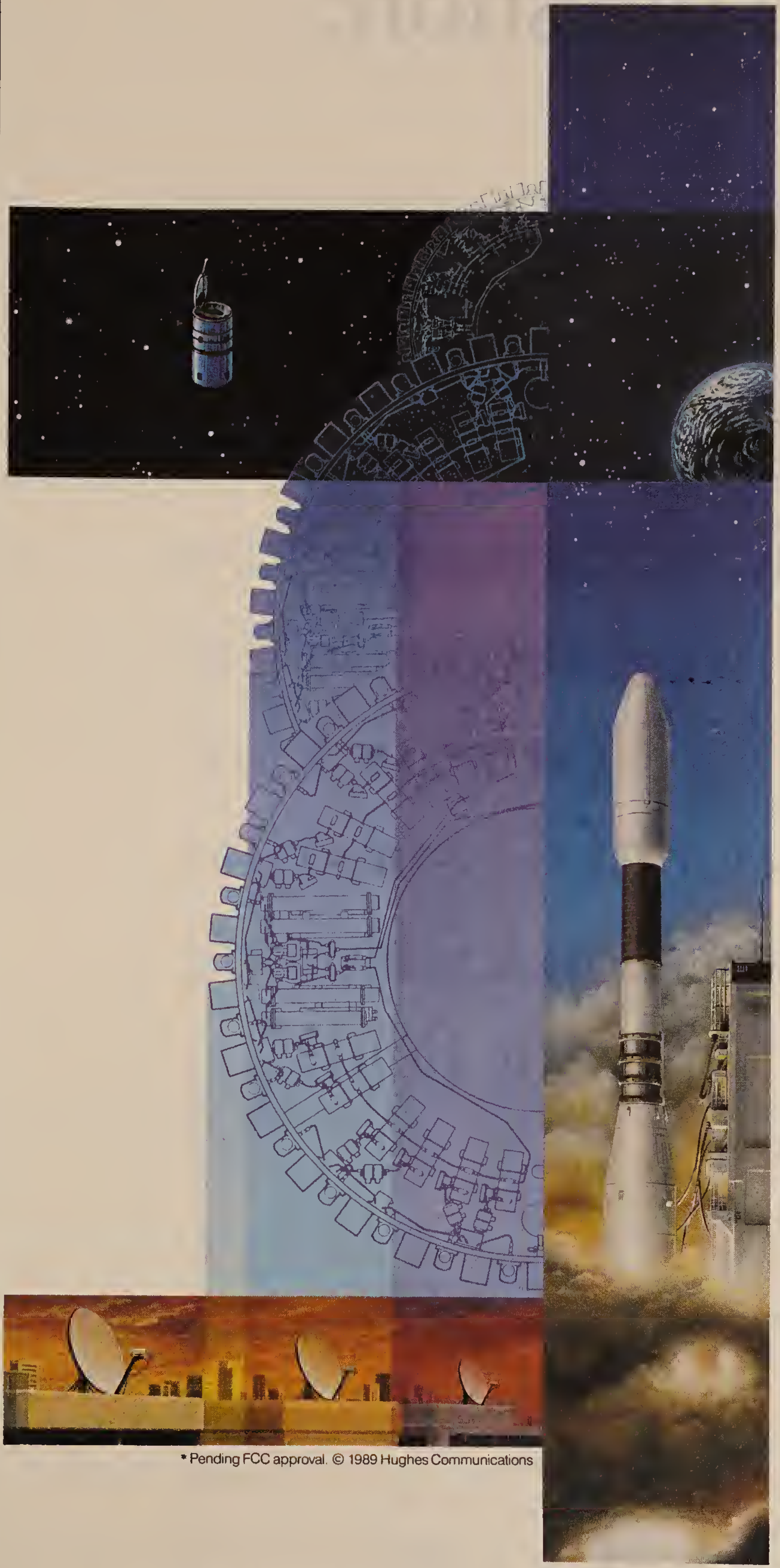
The most common intelligent building solutions include preparing uniform cabling plans that coordinate the type and location of cabling and providing expanded room for crawl spaces beneath floors, vertical risers and equipment closets. This often means higher ceilings to allow for raised floors and expanded ceiling plenums. Some applications, such as voice and data, can share the same wiring, "so it makes sense to come up with a media mix for all of those systems and then install it all at once," Caloz says.

Space must be provided for bridging local nets and other networks. "Much more attention is being given to the installation of raised floors throughout office space and to having communications rooms on each floor of a high-rise building or segment of a sprawling building so that muxes and fiber links can be brought out to the different sectors," Sumski says. "We try to bring all of the cable to a central point on the floor so that the cable ends can be distributed to subsystems.

"Telephone closets are evolving into full-blown rooms that nearly meet the criteria of a data center environment, with air conditioning, separate panels, raised floors, rooms for many cabinets and muxes," he continues. "We call them 'tel-data' rooms now. We're starting to put network controllers into each room to support distributed processing instead of having everything going into a data center."

"Typically, there will be one or two closets per floor. They can be up to 20 by 40 feet in size, and in some cases, they provide 19-in. racks for patching fiber-optic cables, twisted shielded and unshielded pairs, and coaxial cable," Caloz says. "The concept here is that you provide all of the

(continued on page 66)



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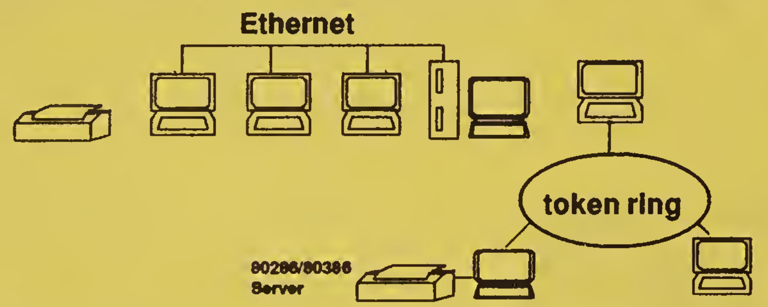

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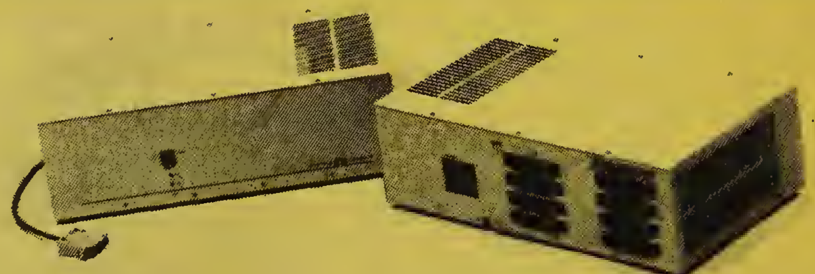

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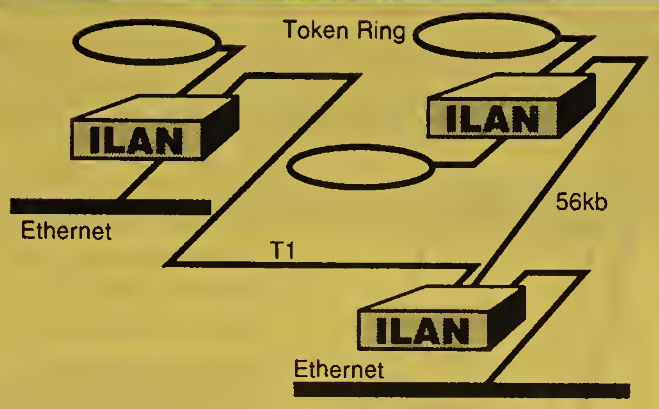

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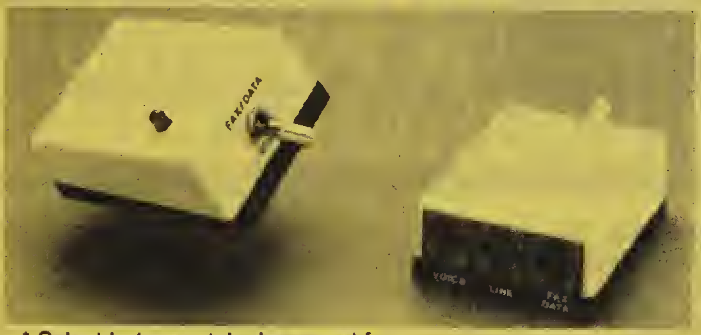

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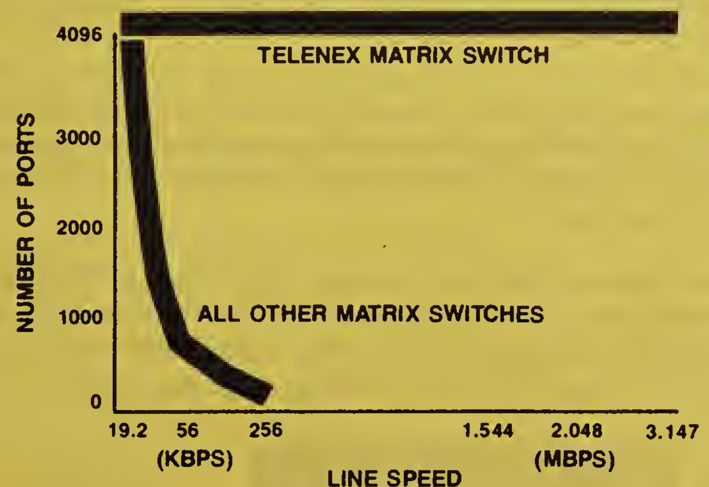

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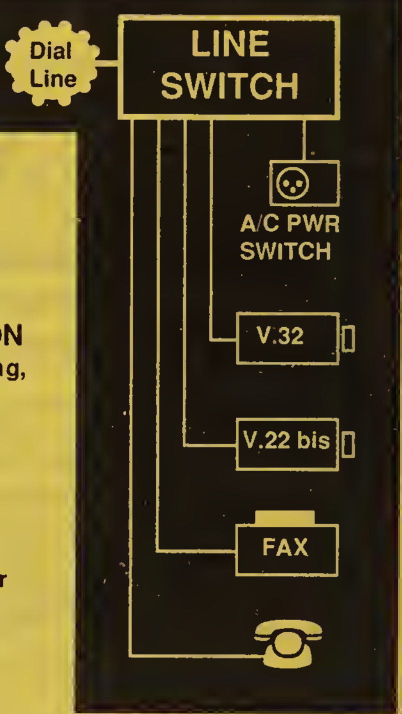

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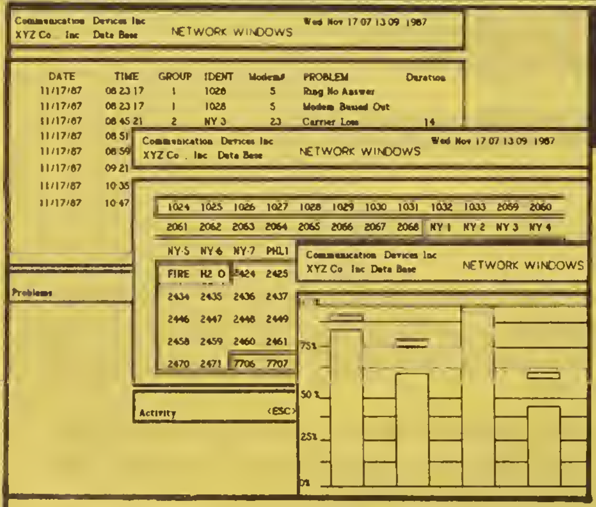
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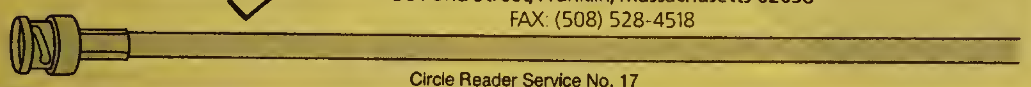

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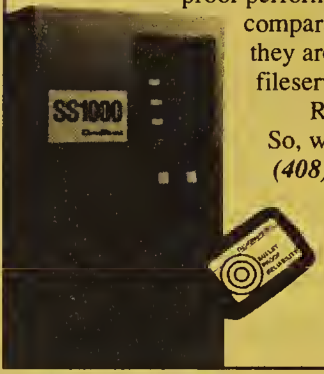

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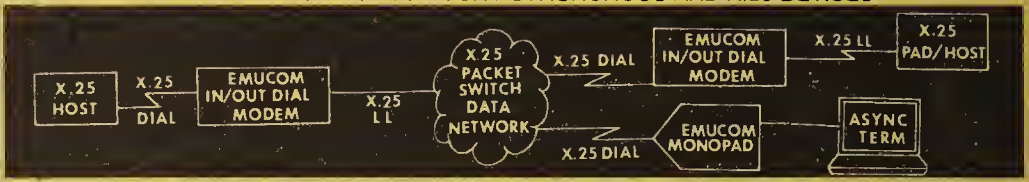

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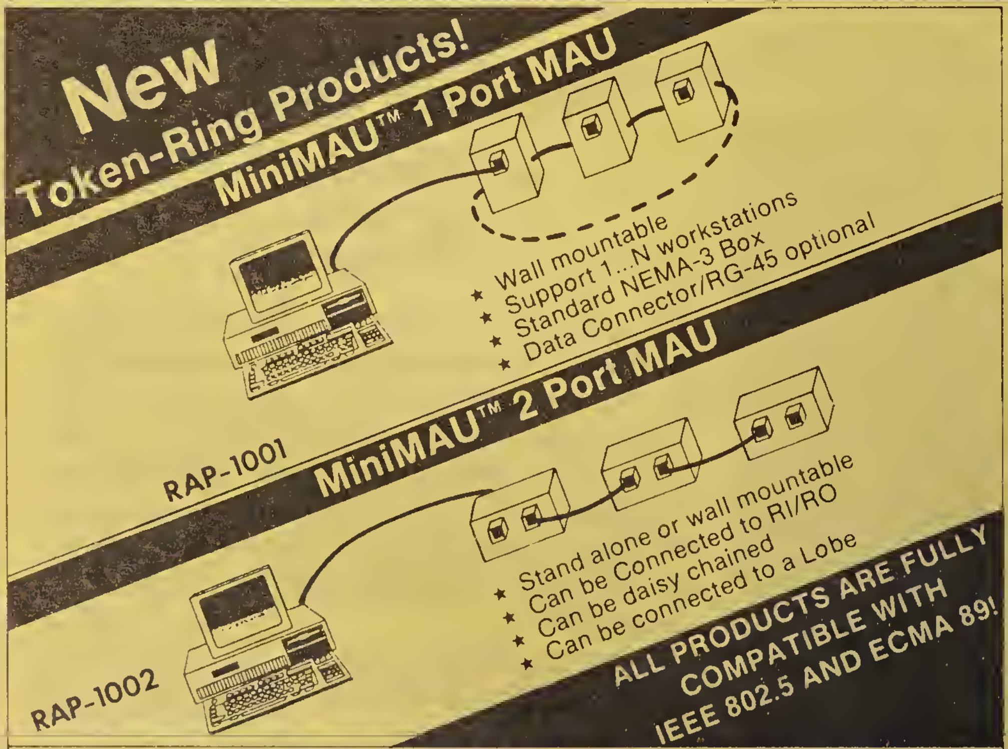
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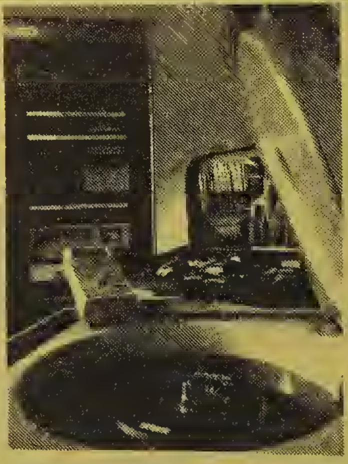

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(continued from page 57)

flexibility in the building so that as moves and changes occur, you can just pick up your telephone and PC, walk into a new office and simply plug into the wall. All of the communications changes are made in a closet."

Sumski calls this "patchability," which means that any communications point can be patched to any other communications point in a building without the skills of a highly trained technician. "You simply plug in a patch cord from Point A to Point B to connect two workstations," he says.

"Although owners used to have vendors make connections, we're finding more and more owners have technology groups that want to make their own connections and install their own components wherever possible," Sumski says. "There has been a vast increase in 'preconnectorized' components and cables, modularized cables and software-driven cable management systems that allow transport of cable information directly onto drawings and floor plans."

High fiber

The mix of wiring media is changing as coaxial cable is replaced by twisted pair and fiber. "We are seeing a lot more fiber being put into buildings because of its bandwidth and flexibility," Caloz says.

"LANs play very heavily now in a building design, and bandwidth is a very serious consideration," Sumski adds. "We have to start addressing the [Fiber Distributed Data Interface] standard, which means we have to allow space for things like fiber-optic muxes and risers for backbones terminating on a fiber-optic patch panel.

"As the FDDI standard evolves, we will be pulling fiber cables out to workstations, and we are asking our clients to consider future cable routing for the FDDI network," he continues. "Attention has to be given to supporting fiber-optic cables in vertical risers. You can't just hang fiber cable because it stretches; fiber has to be supported every so many feet and bending radii, which average 20 times the outside diameter of a fiber cable, have to be strictly maintained."

More coordination is required if systems interact in addition to sharing cable ways and wiring. Fire, security and temperature controls were among the first building systems to use software links that allow some interaction between the systems.

"The most common example occurs when control of the ventilation system is coupled with the fire monitoring system so that in the event of a fire, a floor can be evacuated of smoke and the stairwells and floors above and below can be pressurized to contain the smoke," says American Auto-Matrix's Fisher.

Coupling usually occurs at an operator's control panel, where the two systems' controls and indicators appear side by side, or at a personal computer that monitors and controls several panels — but the systems usually remain functionally separate. Regulatory agencies require this separation so that conflicts or a failure in one system will not disrupt the other.

Some argue that distributed systems can be built with sufficient safeguards, such as redundancy, to make these restrictions unnecessary.

"The current regulations for fire systems were made in an era when distributed microprocessor controls didn't exist, and they really haven't kept pace with what is technologically feasible in a reliable way," Fisher says. "In my opinion, the rules should be changed, but I think change will come slowly."

Path of evolution

Although building control systems have yet to be fully integrated with data and telecommunications systems, they are evolving along the same path toward a distributed networked architecture.

"Bandwidth is a very serious consideration," ESA's Sumski says.

▲▲▲

The intelligence in building controls that handles lighting, security and HVAC is migrating from a single centralized computer to dozens or hundreds of small localized units, "right down to individual room controls, or what are called unitary controls," Fisher says. "They range in size from very small and inexpensive controls to fairly large and sophisticated units."

"The trend in the industry is toward an almost exclusive use of these unitary controls, [managed] by a group of very small but powerful thinking modules," according to Fisher. Unitary controls exchange data via a communications system. Direct digital control modules connected to sensors and actuating devices can monitor several parameters and make control decisions.

"These modules handle only the communications between the various units," Fisher says. "Their job is to coordinate the activities of the unitary controls, such as turning the lights on and off at scheduled times or measuring temperatures and opening valves and dampers to optimize energy use and comfort."

The networks that connect unitary controls typically are multidrop networks using twisted-pair wiring and a fairly low bandwidth baseband signal form similar to an Ethernet network. "There is a trend toward integrating these thinking modules with more traditional types of networks, such as Ethernet, primarily for information management purposes," Fisher explains. "It's just a logical evolution to

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Letters

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MIS vs. the end user

In the column "New models for operations support are necessary" (*NW,* Sept. 4), Mary Johnston suggests a new organizational setup to solve the corporate "problem" of end-user computing.

The basic assumption of the article was that every corporate computing resource must be centralized. This is the classic MIS attitude of getting everything under their control. However, we all know that the typical MIS organization is biting off more than it can chew. Huge backlog, inefficiency and dependency on a centralized system all add up — to the disgust of users who cannot wait months or years to get the results they need in days or weeks.

The problem with MIS departments is that they are so fat and bureaucratically messed up that they cannot move fast. Only recently, and very reluctantly, have they started to talk about prototyping as a solution to pacify users.

Users may be doing their own thing, but that's probably cheaper than getting it done by MIS, which must perform endless studies and analyses, even when the user needs a quick and dirty solution. Networking and other sophisticated software may be efficient, but in today's office environment, most corporations are not using them as practical, day-to-day operational aids because all their needs are often met by a word processor, spreadsheet and data base.

The solution that the author suggests is nothing but the MIS solution, which is, by its very nature, more expensive, less efficient and more time-consuming than what users can, in most applications, handle by themselves. Today's users are more technically sophisticated and can use the computer as an everyday tool like a calculator.

The bottom line is: End-user computing ain't broken — so don't fix it. Leave users alone and let them do their own thing.

Abdul Baqui
President
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have the building control system provide information on building and energy use that can be used by office automation networks."

But this evolution cannot proceed very far until protocol standards for communications between the various systems are developed. "These systems don't necessarily need to be driven off of a single central control, but they do need to be able to speak to one another," says Tishman Research's Donaldson. "The difficulty in achieving that now is that most of the systems and their communications protocols are proprietary."

The Intelligent Buildings Institute, a trade association based in Washington, D.C., is sponsoring a study to determine whether any of the protocols now in use could serve as a building automation protocol or whether a new protocol is required. Protocols are also being developed by Japanese and West German firms and by the British government. Although he does not expect the British and West German efforts to have much influence internationally, Richard Geissler, executive director of the Intelligent Buildings Institute, says his association is "very carefully watching what the Japanese are going to do."

In the U.S., the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) has progressed furthest toward preparing a protocol. The group plans to release a draft next year that "combines the low bandwidth requirements of today's unitary controls with the high bandwith requirements of tomorrow's Ethernet and high-end information-intensive systems," says Fisher, who is chairman of one of the subgroups that is drafting the protocol.

"It's a peer protocol, which means there isn't any single box in charge — all have equal status," Fisher says. "It will allow arbitrary types of controllers to coexist in a multilevel network, so that you can have multiple segments connected with bridging or routing computers. This approach is biased toward the OSI model so that we can accommodate multiple types of media on a network if necessary."

Because ASHRAE's protocol will operate independently of the other network devices' control function, Fisher says it is designed to achieve a comprehensive integration of various building systems — the original goal of the intelligent building.

"If we achieve our goal — and it certainly looks like we will — it will allow us to achieve a robust realization of this seamless intelligent building concept," he says. Thus proving, perhaps, that the intelligent building was a smart idea after all. ◘

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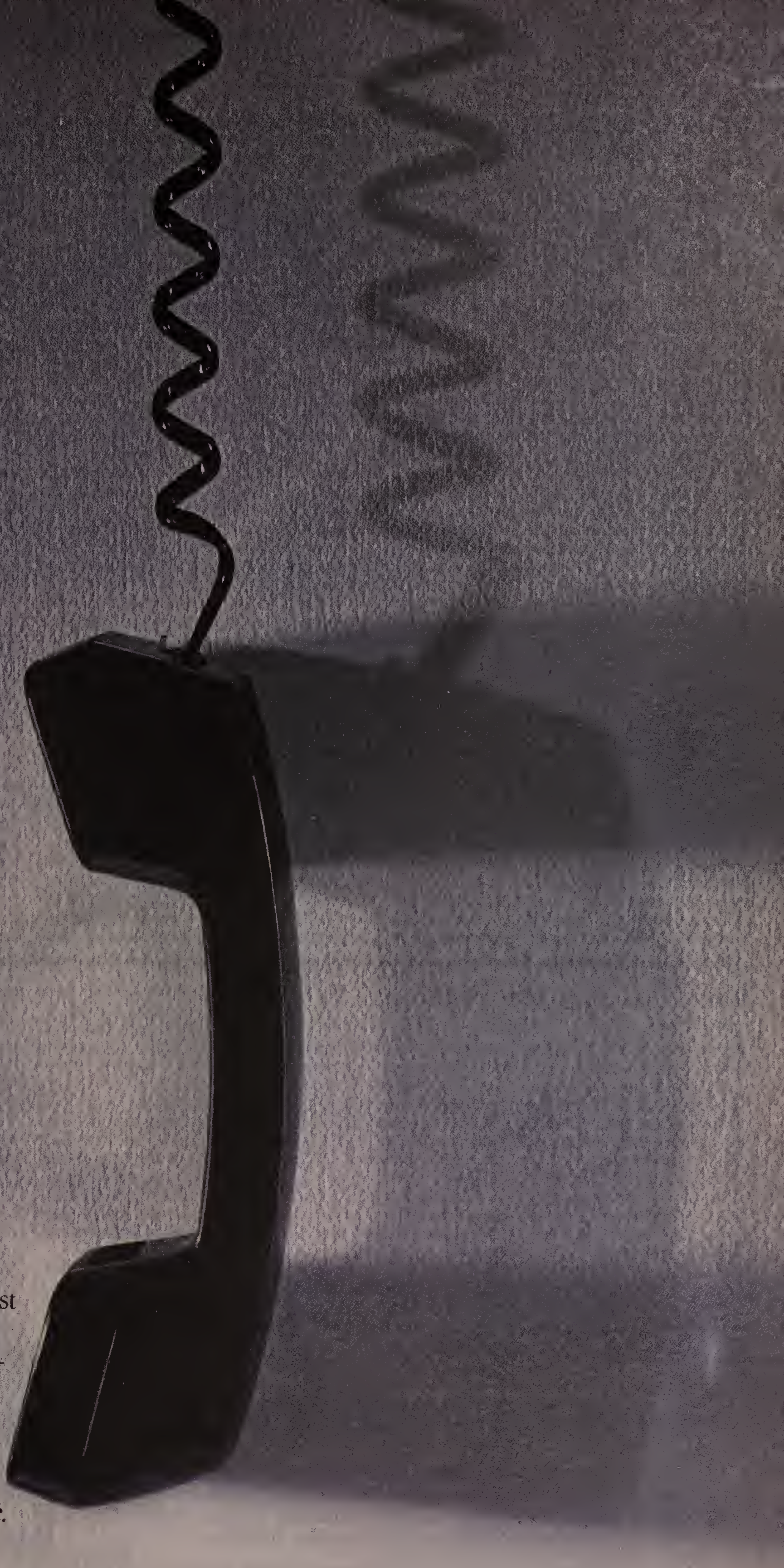

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UB adds to its Access/One line

continued from page 2

Ungermann-Bass announced that for the first time, Transmission Control Protocol/Internet Protocol will be supported across the entire Access/One product line.

The products will bolster the appeal of Access/One, which has emerged as the company's mainstay product, according to Michael Gardner, vice-president of marketing and sales.

Last April, Ungermann-Bass shipped its 1,000th Access/One unit, but Gardner said the company reached another milestone when it shipped another 1,000 Access/One units in the last quarter. While the product accounted for just 16% to 18% of the company's business in 1988, it contributed up to 30% in revenue for fiscal 1989 and is expected to account for almost 50% in 1990.

Leading the barrage of introductions was a five-slot Access/One System Enclosure, which is being positioned as a low-cost, entry-level offering for departments with a small number of local nets that need to be linked to one another or to remote nets.

The product is functionally equivalent to the existing 11-slot offering, the company said.

Like the larger model, the five-slot Access/One cabinet has slots for interface cards that connect a variety of end-user devices.

Ungermann-Bass' five-slot Access/One System Enclosure is priced at $2,095. Like all the new products, it will be available in 90 days. The 11-slot chassis costs $4,200.

The announcement included two products that will let users integrate their Macintosh products into the Access/One wiring scheme: MaxTalk, a LocalTalk device concentrator and router, and Macintosh Universal Workstation (MacUWS), a software package that integrates Macintoshes into TCP/IP environments.

Ungermann-Bass said MaxTalk offers Macintosh users a performance level that is dramatically higher than conventional AppleTalk networks, which split one 230K bit/sec channel among multiple devices. MaxTalk, by contrast, gives each workstation a full 230K bit/sec bandwidth to transmit data.

"The new concentrator card delivers the highest performance and lowest cost way of connecting Macs [to date]," according to Roger Bertman, group director of product marketing for Ungermann-Bass.

MacUWS runs on the Macintosh and gives users access to TCP/IP functions such as File Transfer Protocol, as well as Telnet and Digital Equipment Corp. VT-100 terminal emulation across multivendor nets, according to Jayshree Ullal, product line manager at Ungermann-Bass. MacUWS also lets users maintain up to five Telnet emulation sessions concurrently, Ullal said.

Jack Freeman, a senior data communications analyst with The Yankee Group, a consultancy in Boston, said the two Apple options for the Access/One are meaningful alternatives for linking Macintoshes. "In the corporate environment, AppleTalk is a laughable toy," he said.

MaxTalk costs $4,695; MacUWS is priced at $350 per node.

Ungermann-Bass introduced eight board-level local and remote bridges that give users cost and performance advantages over previous offerings, which were external devices, Ullal said. The new bridges have built-in intelligence to track net configurations and provide fault and performance management.

The bridges included two Fiber Distributed Data Interface (FDDI) offerings: the Access/One Ethernet-to-FDDI SuperLAN bridge for linking IEEE 802.3 Ethernets to an FDDI backbone; and the Access/One token-ring-to-FDDI SuperLAN bridge for connecting token-ring local nets over an FDDI backbone. Both bridges cost $25,000.

Also unveiled were the Access/One Remote Token-Ring Bridge and the Access/One Remote Ethernet Bridge, which link local nets to remote sites over a T-1 circuit at speeds up 2.048M bit/sec — the European T-1 rate. The remote token-ring bridge costs $5,250; the remote Ethernet bridge is priced at $6,500.

The FDDI bridges are the most significant part of the announcement, according to Richard Villars, senior analyst for local networks at International Data Corp., a consultancy in Framingham, Mass. "Given the types of users [Ungermann-Bass is] dealing with and the fact that those users are planning backbone networks, they are hitting the market at just the right time with these products," Villars said.

Other bridges announced and their respective prices are: Access/One Local Token Ring-Ethernet Bridge, $5,250; baseband and broadband Access/One Local Ethernet Bridges, $3,950 and $4,600, respectively; and Access/One Local Token-Ring Bridge, $5,250.

The key upgrade to the Access/One Network Management System involves the user interface, which now provides management information in English. Net administrators previously had to decode management data.

Management information from each enclosure will be provided by local network management agents, called Buffered Baseband and Buffered Broadband Supervisors, which reside in the Access/One enclosure. These provide connections to the backbone as well as control and monitor functions.

The Buffered Baseband Supervisor merges the network interface and supervisor functions previously offered in two separate cards. The new Buffered Broadband Supervisor offers network connectivity and net control functions. The baseband supervisor module costs $4,550; the broadband supervisor is priced at $4,850.

Bank co. opts for fractional T-1

continued from page 2

difference of about .02% in reliability," he recalled.

The pricing, however, is what sealed the deal. "With ASDS, we could get 56K bit/sec digital service at voice-grade private-line prices," Johnson said.

After evaluating fractional T-1 service offered by other carriers, CoBank signed up for ASDS. The first of the fractional T-1 links went into service in July.

Johnson said AT&T was responsive to CoBank and agreed to deploy ASDS in cities that were not scheduled to get the service until later. The data center here uses dedicated T-1 access to AT&T's Denver point of presence (POP), which supports fractional T-1 links to remote AT&T POPs. CoBank offices access the POPs using local Dataphone Digital Service links.

Before the fractional T-1 facilities were installed, as many as 25% of all attempted data calls from the regional offices could not be completed and it regularly took 30 seconds to establish a connection between the user's terminal and the data center.

He attributed some of these problems to workers at the regional offices having to contend with one another for access to 2,400 bit/sec modems through AT&T Dimension 2000 private branch exchanges.

The switches have been bypassed in the new net. Users with Digital Equipment Corp. VT-220 terminals or personal computers equipped with terminal-emulation software are linked to one of six DEC terminal servers in each office, he said.

The servers are tied via Ethernet local networks to Vitalink Communications Corp. TransLAN 3 local net bridges, which support 56K bit/sec Dataphone Digital Service links to the ASDS POP. The fractional T-1 links are terminated at the AT&T POP near the data center and routed over a full T-1 pipe to the bank's AT&T Paradyne 3211 T-1 multiplexer. The multiplexer separates the 56K bit/sec channels and routes them to an eight-port Vitalink TransLAN 3 local net bridge.

The bridge is attached to a DECnet Ethernet supporting two DEC VAX 633Xs, a VAX 8350 and two VAX 750s. The VAXes run a variety of applications, ranging from general ledger to special loan accounting programs, Johnson said.

MCI, AT&T post healthy profits

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maintain an 18% to 20% growth rate into 1990.

Analysts praised MCI's financial performance.

"This was a good, solid quarter for MCI," said Geoffery Johnson, telecommunications analyst at Argus Research Corp., a New York-based stock research firm. He said MCI's growth rate is roughly double the overall rate of growth in the long-distance market, which is estimated at 10% to 12% annually.

MCI said residential traffic volume grew faster than business service volume in the third quarter, due mainly to the company's new PrimeTime discount calling plan and expanded operator and pay phone services. Exact growth rates for the two sectors were not available.

Major contracts

On the business side, MCI was awarded some major contracts during the quarter, including deals with the legislative branch of the U.S. government, Continental Insurance Co., Montgomery Ward & Co., Inc. and Georgia-Pacific Corp. of Atlanta.

"MCI has been stealing business left and right from AT&T," said Argus Research's Johnson. The addition of such new services as 800, international and operator services has allowed MCI to compete on the same level as AT&T, he said.

"I don't believe the thesis that AT&T is no longer losing market share," Gross said. While AT&T revenue has been growing in absolute terms — largely due to overall market growth — the company is losing share and will likely continue to do so at least through 1992, he said.

Gross said AT&T's performance was adequate for the quarter. Despite tough times in the central office equipment, computer and small equipment businesses, AT&T has done an excellent job of controlling costs, he said.

"When revenue growth is hard to come by, you've got to cut your cost structure to try to grow earnings," Gross said.

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DEC fleshes out plans for DECnet Phase V

continued from page 1

strategy for allowing customers to continue to use Phase IV of DECnet while migrating to Phase V. "If they can deliver what they presented [at the briefing], it should be a completely painless operation," said Howard Niden, a senior manager who follows DEC for Price Waterhouse in Pittsburgh.

Phase V nodes, which are DEC VAXes outfitted with the new Phase V software, will coexist with Phase IV nodes on a variety of levels, analysts said.

"Applications written to use the standard Phase IV [application] programming interfaces will run on Phase V nodes without having to be rewritten because the Phase V software will provide the APIs for both Phase IV and Phase V," said Steven Wendler, program director of office information systems at Gartner Group, Inc., a consulting company in Stamford, Conn.

Phase IV nodes can also be directly connected to Phase V nodes, or they can route data to one another through a network of Phase V nodes, Wendler said.

What's in a name?

To help keep track of which nodes support which protocol stack, DEC's new Naming Service will let users attach that information to the device name, according to Mary Modahl, an analyst with Forrester Research, Inc. in Cambridge, Mass. The size of the name field has been expanded from six to 255 characters to support that data.

With Phase V, when one node wants to communicate with another, it will query a name server, which responds with information about the protocols that the target node supports, Modahl said. That will be important not only to keep track of which nodes support Phase IV as opposed to Phase V, but also to track which support OSI and Transmission Control Protocol/Internet Protocol, which are supported under Phase V.

According to DEC documents, the Naming Service stores names in a partitioned data base that is partially replicated throughout the network on DNA Naming Service Clerks. The clerks are clients that track names locally and update a central global server as necessary.

The Naming Service will complement the vast increase in the number of nodes supported under Phase V.

The maximum address field supported in Phase IV is 16 bits long, which means a network can support 64,000 addressable devices configured into a maximum of 63 areas of 1,023 nodes each, Wendler said. Under Phase V, DEC will use an OSI-compatible 20-byte address field, which supports well over a million devices.

New route

DEC also told analysts that DECnet Phase V will support a new level of routing called Initial Domain Part (IDP). Previously, DECnet supported two levels of routing: within an area and between areas. Phase V adds support for collections of areas, or domains, and IDP is used to route between domains.

The algorithm is based on link state routing, under which data seeks the shortest path unless that path is congested. In that case, it is rerouted. Phase V also supports two routes for accessing DECnet end nodes, whereas the Phase IV routing scheme provided only one. The company also restated its commitment to use OSI net management standards in Phase V.

The OSI Common Management Information Protocol will be used when communicating net management data to a central Management Control Center (MCC). The first generation of the MCC is slated to be announced next month but will not have all the capabilities promised in DEC's Enterprise Management Architecture. ◘

HP offers tool for distributed nets

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developer support for NCS to keep pace with Sun and its ONC partners, which have done a good job getting backing for ONC even though NCS is more technically advanced.

"You can make a case that NCS is technically superior to ONC," said Bart Stuck, president of Business Strategies, a consulting firm in Westport, Conn. "But ONC application developers are out there in numbers."

However, Stuck added, Apollo may have time to catch up because "it will take a long time for customers to buy into this distributed computing stuff."

The IBM and Microsoft endorsement cast a somewhat brighter light over the future of NCS, according to Lee Doyle, manager of local network research for International Data Corp., a Framingham, Mass.-based market research firm. "Clearly, HP and Apollo need to get some heavy hitters in their camp if they are to compete, and IBM and Microsoft are two of the biggest hitters in the business right now." ◘

Quake wreaks havoc on Calif. net users

continued from page 1

Hipp said the total number of companies that turn to Comdisco for recovery services could rise to 16 before the earthquake cleanup is complete. By comparison, Hipp said Comdisco has only helped a total of 18 companies through disasters in its entire history. As of press time, eight Comdisco customers were using the company's 24 recovery facilities, and another six were considering doing so.

Sizing up the network damage to local businesses was difficult since many corporations closed their offices following the quake. At some firms, net and information systems personnel were virtually the only people in otherwise empty buildings,

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and they were working around-the-clock to revive crippled networks.

"Everyone's staying away [from our headquarters] except civil engineers and the information systems staff," said a member of the information systems staff at Bechtel, Inc., who requested anonymity. "The power's out, and it's safer for them not to come."

The problems encountered were numerous. In some cases, computers and communications gear were knocked to the floor and rendered inoperable. In others, buildings were declared unsafe to enter, and the information systems employees were told to stay out.

Among those who were forced to abandon major facilities was Pacific Bell. According to a Pacific Bell spokesman, the carrier lost power at its headquarters, which is housed in a skyscraper, and the building was declared uninhabitable.

The spokesman said Pacific Bell's headquarters staff moved to the basement of a nearby low-rise building, which also lacked power, and worked by flashlight and candlelight.

Loss of electrical power turned out to be one of the biggest causes of net downtime.

The downtown area here was without power for nearly two days, and more than 100,000 Californians were still without power at press time. Users that did not have backup power supplies found their nets rendered useless, even if their building and net facilities escaped unscathed.

Among users left with a loss of power was the Pacific Stock Exchange, based here. Power outages disrupted phone and computing services at the exchange's trading floor and data center here. Information systems crews worked throughout the night to reroute net traffic to a mirror-image data processing center in Los Angeles.

Trading continued at the San Francisco stock exchange the day after the earthquake even though there was no electricity, lights or telephone service.

Similarly, Bechtel information systems executives worked late into the night at the company's main data processing and network center adjacent to Bechtel's headquarters here, which also lost power. Operations at the site were finally restored by early Thursday morning, according to Ray Pardo, a Bechtel information systems manager.

The earthquake's path of destruction.

Faring well

Surprisingly, carrier network facilities weathered the earthquake largely intact. Central office switches in the area, with one exception, remained operational throughout the earthquake. Three other switches sustained structural damage but stayed on-line.

The one central office that went down was a Pacific Bell switch located in Hollister, Calif., near the earthquake's epicenter. The switch was shut down for seven hours due to problems with a backup power generation system.

No major cable cuts were reported.

The biggest carrier problems stemmed from the volume of telephone calls stimulated by the disaster. AT&T carried more than 40 million calls between 8 p.m. and midnight Eastern Standard Time after the earthquake, more than 2½ times the norm, according to Jim Nelson, director of the carrier's network operations center.

AT&T blocked 70% of the calls going into the Bay Area to relieve network strain and clear lines for emergency calls, Nelson said. The increased calling volume also blocked about 4% to 5% of all nationwide calls. Pacific Bell said it was blocking about 50% of all local calls.

Even though the carrier's networks fared well, its biggest trade conference did not. The United States Telephone Association was forced to close down its annual conference one day early because of the earthquake. About 2,700 people were attending the event at a hotel here.

Despite the widespread destruction, several users said their networks escaped with little or no measurable damage.

Among them is McKesson Corp., based here. While power outages caused the pharmaceutical supply giant to close its headquarters here, as well as a data processing center in Oakland, Calif., data processing and network operations proceeded without a hitch.

Data traffic that usually would have been routed to the company's Oakland data center was simply rerouted to a mirror-image data center in Rancho Cordova, Calif., far away from the earthquake zone.

McKesson only recently built the Rancho Cordova data center.

"Believe it or not, we chose [Rancho Cordova] because it's very stable and not prone to earthquakes," said John Fitzgerald, the company's vice-president of information services. "Besides, the weather's great. Despite what you may think, not all of California sits on a fault line." ◻

Bob Wallace, Tom Smith and Anita Taff contributed to this story.

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Users urging FCC not to nix tariff

continued from page 1

to leave the tariff alone. Last week, 15 corporations, including Merrill Lynch & Co., Inc., one of MCI Communications Corp.'s largest customers, sent a joint letter to FCC Chairman Alfred Sikes opposing any Tariff 12 changes, according to Henry Levine, a Washington attorney with the law firm Morrison & Foerster.

Other firms that signed the letter — customers of US Sprint Communications Co. and MCI, as well as AT&T Tariff 12 and non-Tariff 12 customers — are: Chrylser Corp., MasterCard International, Inc., BankAmerica Corp., The Chase Manhattan Bank, N.A., National Westminster Bank USA, Securities Industry Association, Security Pacific National Bank, Drexel Burnham Lambert, Inc., Manufacturers Hanover Trust Co., Citibank, N.A., The Prudential Life Insurance Company of America, Marine Midland Bank, N.A. and Visa USA, Inc.

The letter said the existence of Tariff 12 has created an intensely competitive market that benefits users. To add restrictions that would require uniform pricing or other conditions would not be in users' best interest, it stated.

Efforts to produce the letter were coordinated by Levine. "It represents a ground swell of the user community that wants to preserve an open marketplace," he said. AT&T in no way prompted the companies to write the letter, he added.

The FCC is reviewing its April Tariff 12 decision in response to petitions from the Independent Data Communications Manufacturers Association (IDCMA) and carrier Williams Telecommunications Group, Inc.

They claimed the FCC's April order failed to address a number of legal concerns raised by opponents, including pricing differences among the Tariff 12 deals, terms and conditions not listed in the tariff, and possible bundling of customer equipment with regulated services.

Despite these complaints, sources say that pleas from users have hit home at the FCC and all but killed an effort to reject or make major revisions to the tariff. The FCC had earlier considered revising the tariff to include a pricing matrix — which would have established a consistent pricing structure for all customers — but now seems to be backing off.

Staff members at the FCC who have seen a draft of the ruling which will be issued this week said privately that the commission would only call for minor modifications.

It is unlikely that the FCC would reject the tariff because it would be too disruptive to the marketplace, they said. AT&T is now offering or has proposed to offer Tariff 12 deals to 19 customers.

"I can't imagine that the commission is going to do anything but confirm its earlier decision," said Charles Helein, counsel for the Alternative Carrier Telecommunications Association, an opponent of Tariff 12.

Although the makeup of the FCC has changed almost completely since the Tariff 12 order was issued, Helein said it is unlikely that the agency's favorable opinion of the tariff has changed much. This is particularly true, he points out, since officials have heard only from customers who want to take advantage of Tariff 12 discounts.

Another attorney who is familiar with Tariff 12 said he doubts the earlier order will be overturned. "I'm not particularly optimistic that the FCC will bite the bullet, say [Tariff 12] is illegal and throw it out."

An attorney with Williams Telecommunications said it is unlikely that the FCC will overturn its earlier decision because its request for reconsideration concerned specific problem areas, not the order as a whole.

Herb Marks, counsel for the IDCMA, said he is hopeful the FCC's decision on Tariff 12 will be reversed. "We expect that our position in favor of all users will prevail at the FCC," he said.

MCI, which has been a vocal opponent of Tariff 12, declined comment.

Regardless of the decision this week, Tariff 12 still has to withstand scrutiny from the courts. IDCMA, MCI and US Sprint have all appealed the FCC's decision endorsing Tariff 12 to the U.S. Court of Appeals for the District of Columbia. The court case was put on hold, pending the outcome of the FCC's reconsideration. ◻

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ALLIGATORS IN THE SWAMP

Unforeseen problems that can put the bite on your network

A little knowledge is a dangerous thing

BY BRIAN JAY GOULD

A noted chemist at a major university had picked up a lot of computing knowledge as a result of his research involving computational chemistry. He was accustomed to evaluating and selecting his own computing equipment. Suddenly, he faced the problem of networking his systems together.

After "consulting" with a few salespeople, he contacted the university's telecommunications department with his order. "No, I will not accept 62.5 micron fiber for the connection," he insisted. "I need the high bandwidth that can only be provided on a 100 micron fiber." The telecommunications manager tried to explain to him that thinner fibers have a higher bandwidth potential than thicker fibers, but the chemist would not be dissuaded.

The chemist never told the telecommunications department why he wanted to connect the two locations: He wanted to bridge two Ethernets, which were already connected, through an existing broadband backbone.

To keep things working after the new connections were installed, the backbone had to be disconnected from one of the two chemistry department Ethernets. It took several hours of debugging and reconfiguration to solve a problem that could have been solved simply by changing a software parameter.

Dangerous users

There is a new wrinkle in the critical communications link between users and telecommunications consultants: The users are trying to talk technical. They now know enough about telecommunications to ask for what they think they want but not enough to be sure they are making the correct choice. The source of misinformation is often an eager salesperson trying to "educate" users.

Nowadays, consultants and telecommunications providers rarely receive requests to connect personal computers or provide mainframe access. Now the requests are for 3Com Corp. terminal servers, private branch exchanges and Telebit Corp. Trailblazer modems. Often the user making the request has no understanding of the product's capabilities.

Daniel Avery, a staff manager with AT&T Business Special Services in Bedminster, N.J., says, "Usually, users have preconceived notions as to a technical solution before they ask for assistance. If the users have already selected a vendor, it can be frustrating and time-consuming to either reengineer the solution or engineer around that solution."

Compatibility with standards is another problem. Although standards are important, they are often requested out of context. "Your solution for connecting our remote printer to our mainframe does not comply with the [Fiber Distributed Data Interface] proposed standard," a user will say. So? The connection involves a point-to-point link with a bandwidth requirement of 8,000 bit/sec. What does a 100M bit/sec local network standard have to do with it?

The marketing connection

Brian Gately, an account manager with New Jersey Bell Telephone Co., explains, "Customers get their information from many sources. They depend upon their salespeople to keep them apprised of new technologies and products that help them fulfill their requirements."

This is true for consultants and telecommunications providers as well. Consultants and providers constantly evaluate new technologies through sales presentations and product releases. The danger lies in receiving too little information and forming a biased view. Educated users and consultants are aware of new technology as soon as it emerges as a product. The consultants' edge is knowledge of preproduct research through technical publications and inside information.

Many salespeople are truly interested in solving users' problems and will advise them when another product is a better fit, in exchange for customer loyalty. Naturally, some salespeople are biased toward the products and services they represent; others will claim or misrepresent anything to get the sale.

Successful marketing professionals fulfill users' emotional needs. They answer users' basic questions and empower them with "knowledge," thus taking away the feeling of helplessness many users have. Once users are told the nature of their problems and the capabilities of touted products, they think they can solve their own problems by simply ordering those products. Many users find this much more gratifying than calling the telecommunications department for advice.

Some users attend seminars titled "Introduction to Data Communications" and "How to Connect Your Personal Computers," only to return and believe everything the first salesperson offers. Or worse, they contact vendors to replace their "obsolete" voice and data systems. The president of a small telemarketing company was convinced that her state-of-the-art PBX needed replacement. The system wasn't outgrown, and she didn't want any new features. "But," she insisted, "we were taught that every three years the system has to be replaced."

Internal education

The best thing a telecommunications manager can do is educate users internally. If no one on the telecommunications staff feels comfortable creating a seminar and presenting it, hire a consultant to customize a program for the specific environment. Explain what is going to happen and what technology is going to be implemented in terms of both the technology and its effect on users. Don't try to hide anything; it won't work.

Videotape the seminar and offer it to anyone in the company who wants to borrow it. Document the information presented in the seminar and make the documentation available to users. Provide a hot line for questions and assistance. Sponsor an electronic conference and a newsletter. Frequently ask users for feedback and respond to every suggestion.

In some environments, such as universities and government agencies, users have their own budgets and, in some cases, their own networks. These users can be made allies through education and feedback. "Self-Defense Against the Telecommunications Sale" would make an excellent starting seminar.

Point out that some salespeople belong to the Carl Sagan School of Telecommunications Sales. They sell "billions and billions of bits-per-second with billions and billions of error-free bits." Users can pick up on how to do a needs analysis very quickly and get beyond the numbers game.

You can't overemphasize the importance of the Open Systems Interconnection model. The next salesperson to say "Of course it can share files with your computer. See? It has an Ethernet adapter" will be startled to find an educated user respond with, "Well, Ethernet is a Layer 2 protocol. Which file-sharing applications do you support?"

Don't forget — the telecommunications department has the superior knowledge and ability to solve problems, but users often have the best perspective on them. One user in a department could be designated an internal communications consultant.

Consultants and service providers still need to find out what the user really wants to do. Get to the heart of the problem. What is the application? What is the business problem? What does the user hope to accomplish? First and foremost, solutions must solve the users' problems. ■

Gould is vice-president of Network Design Corp., headquartered in Omaha, Neb.

IT'S HARD TO DRAIN THE SWAMP when those reptiles keep getting in the way. If you have a network "alligator story" to share with *Network World* readers, call Steve Moore, features editor, at (508) 820-2543, ext. 732, or fax your idea to (508) 879-3167.

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